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THE FOREST FLORA OF NEW SOUTH WALES.

BY

J. H. MAIDEN

GOVERNMENT BOTANIST
AND DIRECTOR OF THE BOTANIC GARDENS,
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J. H. MAIDEN.

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No. 36.—A Stinkwood (*Albizzia pruinosa*, F.v.M.).
No. 37.—The Leopard Wood (*Flindersia maculosa*, F.v.M.).
No. 38.—The Queensland Nut (*Macadamia ternifolia*, F.v.M.).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXI.

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No. 77.*

Flindersia Bennettiana, F.v.M.

The Crow's Ash or Bogum-Bogum.

(Natural Order MELIACEÆ.)

Botanical description.—Genus, *Flindersia*. (See p. 209, Part X.)

Botanical description.—Species, *F. Bennettiana*, F. Muell. Herb.

A large tree.

Leaves.—Opposite, crowded under the panicles.

Leaflets.—3 or 5; from ovate to ovate-lanceolate or oblong, elliptical, obtuse or scarcely acuminate, 2 to 3 inches long in some specimens, 4 to 5 inches in others, glabrous, very coriaceous, not oblique, and scarcely petiolulate, the common petiole angular.

Panicles.—Ample, sometimes short, sometimes exceeding the leaves, minutely stellate-pubescent.

Petals.—About 3 lines long, rather broader than in *F. Oxleyana*, glabrous or nearly so.

Fruit.—2 or 3 inches long, muricate.—(B.Fl. i, p. 389.)

Seeds.—Winged.†

In a number of specimens I have seen the wing is all round the seed, as shown in the figure, Plate 78, figure E, and this appears to be the normal form.

This species has from time to time been confused with *F. australis*, but I do not doubt that the plates will make the differences between the species quite clear.

F. Bennettiana has the leaflets fewer, larger, and thicker; the fruits smaller, with less formidable points, and with the overlapping edges of the valves not rough as in *F. australis*. There are other differences that the reader is invited to note for himself, with the aid of the illustrations and of the text.

Botanical Name.—*Flindersia*, already explained (see p. 210, Part X). *Bennettiana*, in honor of the late Dr. George Bennett, of Sydney, (1804–1893), author of "Wanderings in New South Wales, Batavia, Pedir Coast, Singapore, and China," 2 vols. 8vo., London, 1834, and "Gatherings of a Naturalist in Australasia,"

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* No. 76 is the last number of Part XIX. Part XX is a recapitulatory number—that is to say, no new trees were described in it, and therefore no new numbers are employed.

† Bentham says, "at the upper end only, or some with a very small wing also at the lower end, but only seen in one capsule."

1 vol. 8vo., London, 1860. For further particulars of Dr. Bennett, see Mennell's "Dictionary of Australasian Biography" (1892), also Professor David's Presidential Address (Linnean Society, N.S.W.) vol. xviii, p. 542.

Vernacular Names.—The origin of the name "Crow's Ash" or "Crow's-feet Ash" is one concerning which there is room for conjecture.

It may be that a timber-getter, in felling a Flindersia, found in a fork the remains of crows eaten by some birds (perhaps hawks), the feet alone being left behind.

Mr. W. Dunn, however, points out another explanation. He states that crows are as fond of the winged seeds as cockatoos are, and thinks it is quite possible the name may have originated in that way.

The name "Crow's Ash" is one given by some Queenslanders and Richmond River people to Teak (*F. australis*). It has also been sent to me as a name for *F. Bennettiana*, a closely-allied species. As Teak is a fixture for *F. australis*, I think it is desirable to encourage the name "Crow's Ash" for *F. Bennettiana*, which is one of the high trees in which crows build.

"She-Teak" is a name given me by Mr. W. Baeuerlen as in use on the Richmond River. It is also known as "Stave Wood."

Aboriginal Name.—"Bogum-Bogum" of the aborigines of the Richmond River, New South Wales. See No. 1 of Moore's "List of Northern Timbers for the London Exhibition of 1862."

Synonym.—*F. australis,* F.v.M., Fragm. iii, 26, not of R. Brown.

Leaves.—The leaflets are the largest of those of any species of *Flindersia.*

Flowers.—These are white, and, although individually small, are in such large panicles that they are of a handsome character.

Fruit.—The fruit is smaller than that of *F. australis,* nor are the edges of the valves rough as in that species.

Bark.—Somewhat resembles that of *F. australis,* which has doubtless tended to add to the confusion between the two species.

Timber.—The following account of this tree was written by the late Mr. Charles Moore for the "Catalogue of N.S.W. Exhibits at the London Exhibition of 1862":—

> This tree is very abundant in the coast brush forests, there attaining a height of 80 feet, and 2 feet diameter. Comparatively rare and of small size on the Clarence. Its large, bright, glossy foliage, and masses of terminal white flowers render it a conspicuous object wherever it grows. The wood is seldom used by the settlers, but, as it splits well, might probably be valuable for staves.

For many years the Teak (*F. australis*) went under the name *F. Bennelliana*, and a caution is given on the subject. We know very little about the "Crow's Ash" (*F. Bennettiana*). It is certainly a much rarer tree than the Teak. We know that it is pale-coloured, and that it is fissile (it is used for staves); but what else do we know about it? What are its properties as compared with Teak and Cudgerie?

Size.—Moore says it attains a height of 80 feet, and a diameter of 2 feet.

Habitat.—The localities given in the "Flora Australiensis" are—

Queensland.—Wide Bay (Bidwill); Brisbane River, Moreton Bay (A. Cunningham, Fraser, W. Hill).

New South Wales.—Clarence River (Beckler).

It is a brush tree, and we know very little about its distribution. We do not know its precise southern range, nor are we able to say, with a close approximation to accuracy, its relative abundance on any particular area.

It is represented in the National Herbarium, Sydney, from the following localities:—

New South Wales.—Tweed River (Mrs. Grime); Lindendale, Lismore, "10–15 feet," also Lismore, "40–60 feet, 9–18 inches diameter" (W. Baeuerlen); Experimental Farm, Wollongbar; Richmond River (J. A. Henderson); Reserve, Dalwood, Richmond River (W. W. Watts); Three-mile Scrub, Byron Bay (W. Forsyth); Stroud district (the late Augustus Rudder), no specific locality given, and, therefore, doubtful.

Queensland.—Brisbane (J. L. Boorman); Eumundi (F. M. Bailey); Gympie (F. Hamilton-Kenny).

I invite correspondence in regard to this tree.

Propagation.—It is readily cultivated from seed.

But if we know little of this tree in the forest, it is the best-known of all the *Flindersias* in cultivation in Sydney. It is a handsome avenue tree. Its large, glossy leaflets, with a profusion of large white masses of smallish flowers, borne on a neat, erect trunk, render it a valuable addition to any garden of trees. It appears to be perfectly hardy in the Sydney climate.

EXPLANATION OF PLATE 77 (Flowers).

A. Flowering branch with the flowers of natural size.

B. Flower (enlarged).

C. Expanded flower showing—
- (*a*) Petals.
- (*b*) Stamens.
- (*c*) Staminodia.
- (*d*) Disc.
- (*e*) Ovary.
- (*f*) Stigma.

D. Part of flower showing—
- (*a*) Stamens.
- (*b*) Staminodia.
- (*c*) Disc.
- (*d*) Ovary.
- (*e*) Stigma.

E. Stamens.

F. Staminode.

G. Transverse section of ovary.

H. Calyx.

EXPLANATION OF PLATE 78 (Fruits).

A. Leaf or portion of stem showing articulation of petiole.

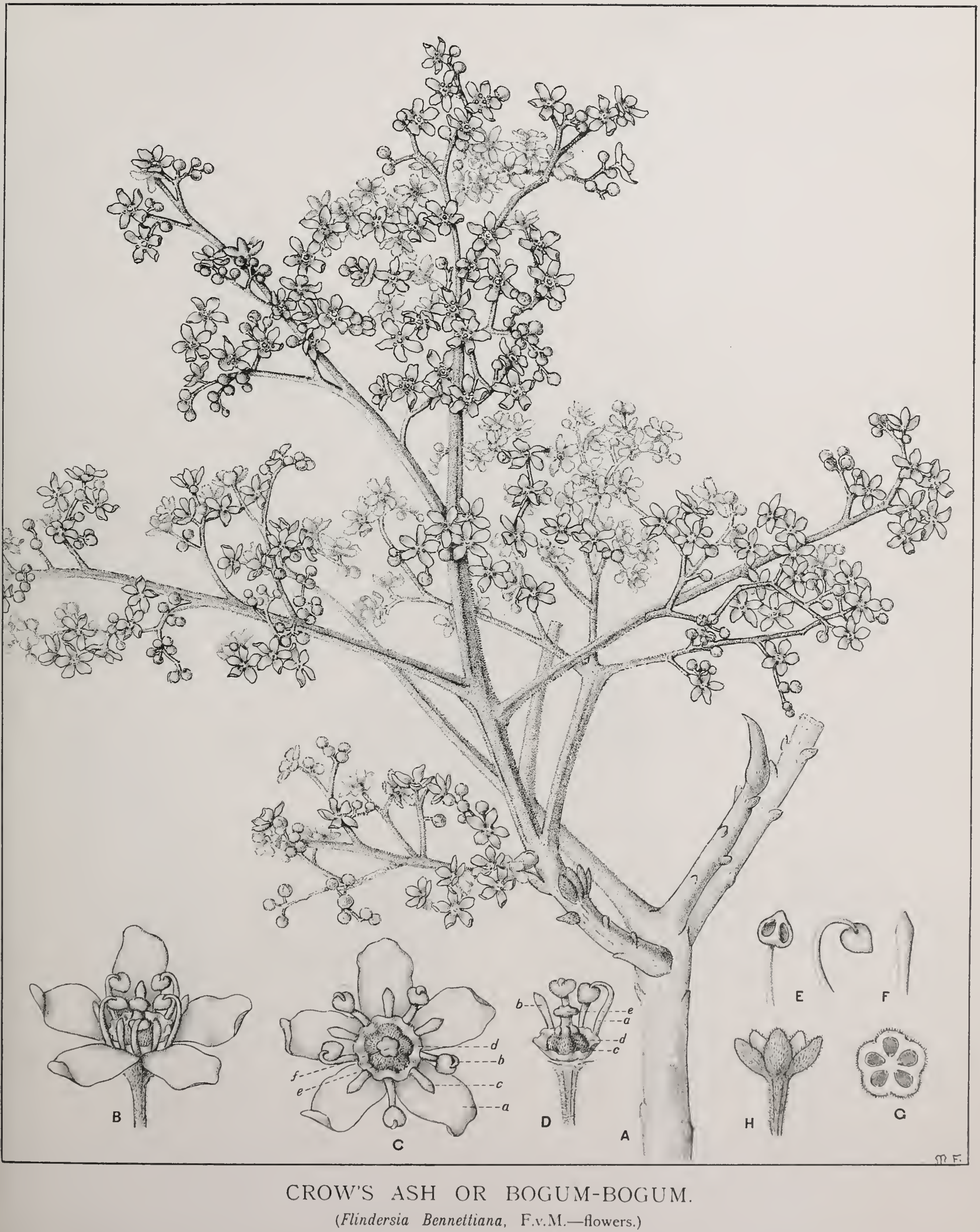
B. Fruit.

C. Capsule opening septicidally.

D. One valve of capsule.

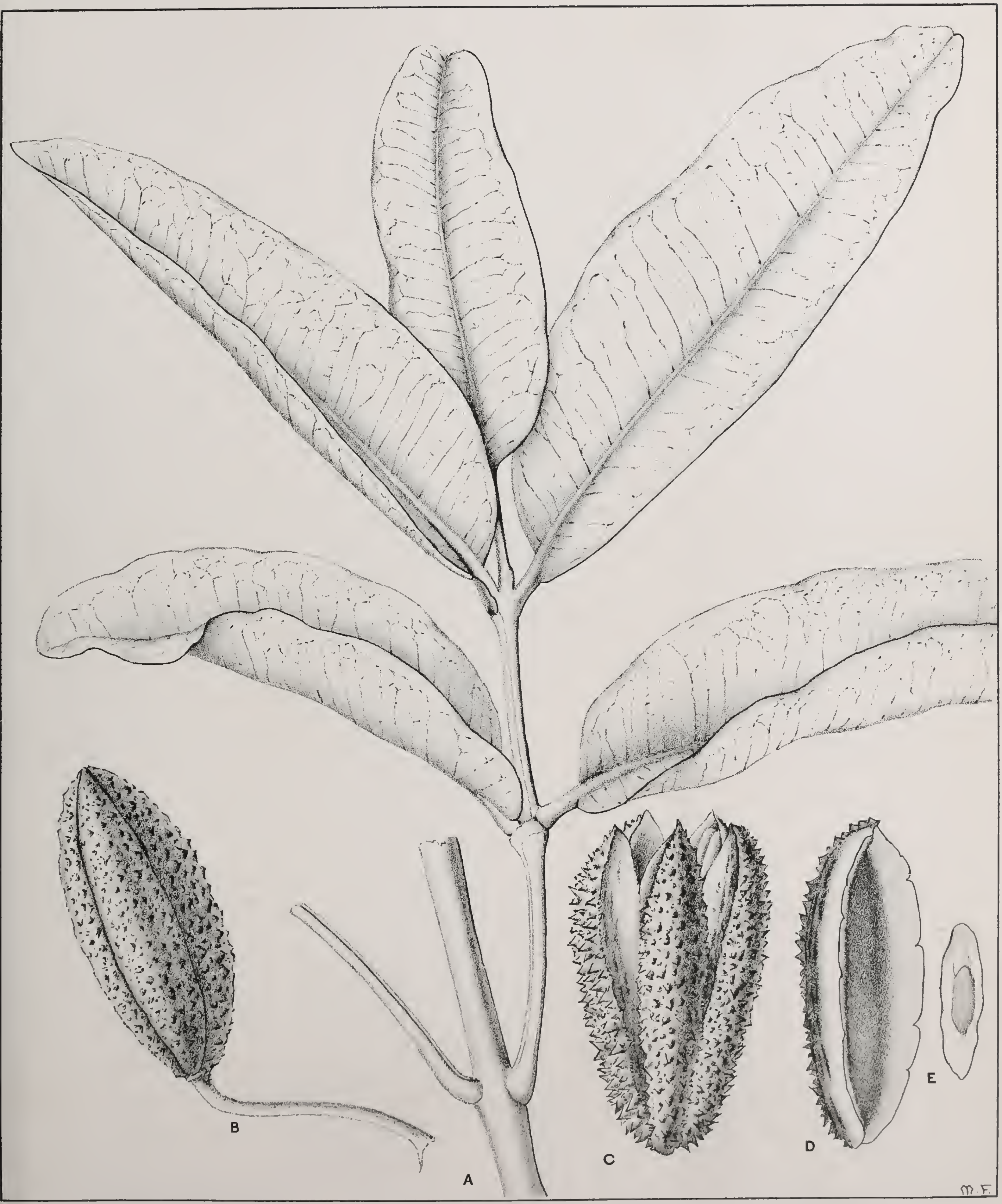
E. Seed, winged all round.

N. B.—The fruits were drawn from specimens attached to leaves, and therefore their botanical origin is not open to doubt.



CROW'S ASH OR BOGUM-BOGUM.

(*Flindersia Bennettiana*, F.v.M.—flowers.)



CROW'S ASH OR BOGUM-BOGUM.
(*Flindersia Bennettiana*, F.v.M.—fruits.)

No. 78.

Eucalyptus Andrewsi, Maiden.

The Blackbutt or Peppermint (of New England).

(Natural Order MYRTACEÆ.)

Botanical description.—Genus *Eucalyptus.* (See p. 33, Part II.)

Botanical description.—Species, *E. Andrewsi,* Maiden, in *Proc. Linn. Soc. N.S.W.*, 1904, p. 472.

A tall tree.

Juvenile leaves.—Rather large and soon becoming alternate, glaucous. The youngest foliage available o me is elliptical and about 4 inches long, by half the width, with petioles of ½ inch. "Seedlings have erect habit, with fairly large leaves; pale in colour."—(R. H. Cambage.)

Mature leaves.—Broadly lanceolate, sometimes falcate, but apparently usually symmetrical. Dull on both sides and even glaucous,* but ultimately glabrous and even shining; equally green on both sides, venation spreading from the base. Usually under 6 inches long, and about 1 inch wide. Of a distinct peppermint odour.

Buds.—Clavate, the operculum sometimes slightly umbonate. A free flowerer, the anthers reniform.

Fruits.—Nearly hemispherical, about ¼ inch in diameter; with a flat thick rim, tips of the valves flush with the mouth; peduncle thin; angular, ½–¾ inch long, pedicels about ⅛ inch in length. Fruits abundantly produced, usually six to nine in the head. The fruits remind one of those *E. hæmastoma*, var. *micrantha.*

Bark.—Has "peppermint" bark on the trunk and large branches; only the ultimate branches smooth. Twigs red (claret-coloured), often glaucous, usually round, apparently rarely angular.

Timber.—Pale-coloured, comparatively light in weight, and very fissile, containing a few kino veins. So similar in appearance to that of *E. piperita*, Sm., that I am at present unable to indicate any difference.

This species in habit, bark, and timber seems to come closest to *E. piperita.* Its buds and fruit are, however, very different. It is also allied to *E. dives,* but it has not the characteristic juvenile foliage of the latter, from which it differs in other respects. Its similarity in fruits to *E. hæmastoma* has already been alluded to.

This species was first prominently brought under my notice by Mr. R. H. Cambage, in October, 1903. That gentleman collected it and made extensive notes concerning it.

Botanical Name.—*Eucalyptus,* see p. 34, Part II; *Andrewsi,* named in honour of Ernest Clayton Andrews, B.A., Geological Surveyor, Department of Mines, New South Wales, who has been giving attention to the flora of New England, particularly as regards the vegetation on various geological formations, and who has made special inquiries in regard to the tree that is now called by his name.

---

* Glaucousness often varies a good deal with the season of the year; *e.g.*, specimens received by me in October, 1903, were entirely dull or glaucous, others received in June, 1904, are slightly shining.

Vernacular Names.—Known locally as "Blackbutt," less frequently as "Peppermint" and "Messmate." It is the "Blackbutt" of Mr. W. Christie's paper,* and his "Specimen No. 11" (p. 35) has been preserved. Known all over New England as "Blackbutt." At Oban it is called "Bastard Stringybark," and at Emmaville "Messmate" (E. C. Andrews). Sometimes called "White Top." *See* "Timber."

It must not be confused with the common Blackbutt (*E. pilularis*), while there are other Peppermints, even in New England. Perhaps it would be better to call it the "New England Blackbutt or Peppermint."

Aboriginal Names.—I know of none.

Fruits.—Sometimes the fruits are more or less pear-shaped (pyriform).

The specimens referred to as *E. Sieberiana*, F.v.M., var. *Oxleyensis*, Deane and Maiden, in the *Proceedings, Linnean Society, N.S.W.* (xxiii, 794, 1898), for the most part belong, in my opinion, to *E. Andrewsi*. They have smaller fruits, usually more pyriform than the type, but in view of the fact that the fruits of typical *E. Andrewsi* vary more than ordinarily as ripening proceeds, it is premature to define varieties of *E. Andrewsi* at present.

The Cobark and Upper Williams River specimens were referred by Deane and Maiden, *Proceedings, Linnean Society, N.S.W.* (xxvi, 123, 1901), to *E. fastigata* (pyriform series). Included with these are some specimens which are indubitably *regnans* (*fastigata*), and I would draw attention to the remarkable similarity of some specimens of *E. Andrewsi* to those of some *E. regnans*.

Bark.—Sub-fibrous, of the usual Peppermint character.

Timber.—A pale-coloured timber, somewhat disfigured by gum-veins. Not a timber of the first-class.

Split for palings.—(R. H. Cambage.)

Timber seemingly preferred to all others for fencing, building, etc.—(J. L. Boorman.)

[In this connection it may be pointed out that the value of a timber is comparative; the best timber of a district may be inferior to that of another district.]

Mr. District Forester E. A. Stopford, of Armidale, reports:—

> I am unable to ascertain that it is known by any other name than White Top by the local saw-millers and timber-getters, and the reason of its receiving this name is that the bark, when trees are of medium size, resembles the bark of White Box, but, as it gains age, the bark becomes darker in shade.
>
> The timber is much liked by saw-millers, and a large proportion of that used in Glen Innes is of this kind, and builders consider it to be excellent; it has also in the past been extensively used for sleepers. That it will stand in the ground, though not usually used for piles, is proved from the fact that the blocks underneath the goods-shed, at the Glencoe railway station, are "White Limb"; they have been in the ground twenty years, and are quite sound.

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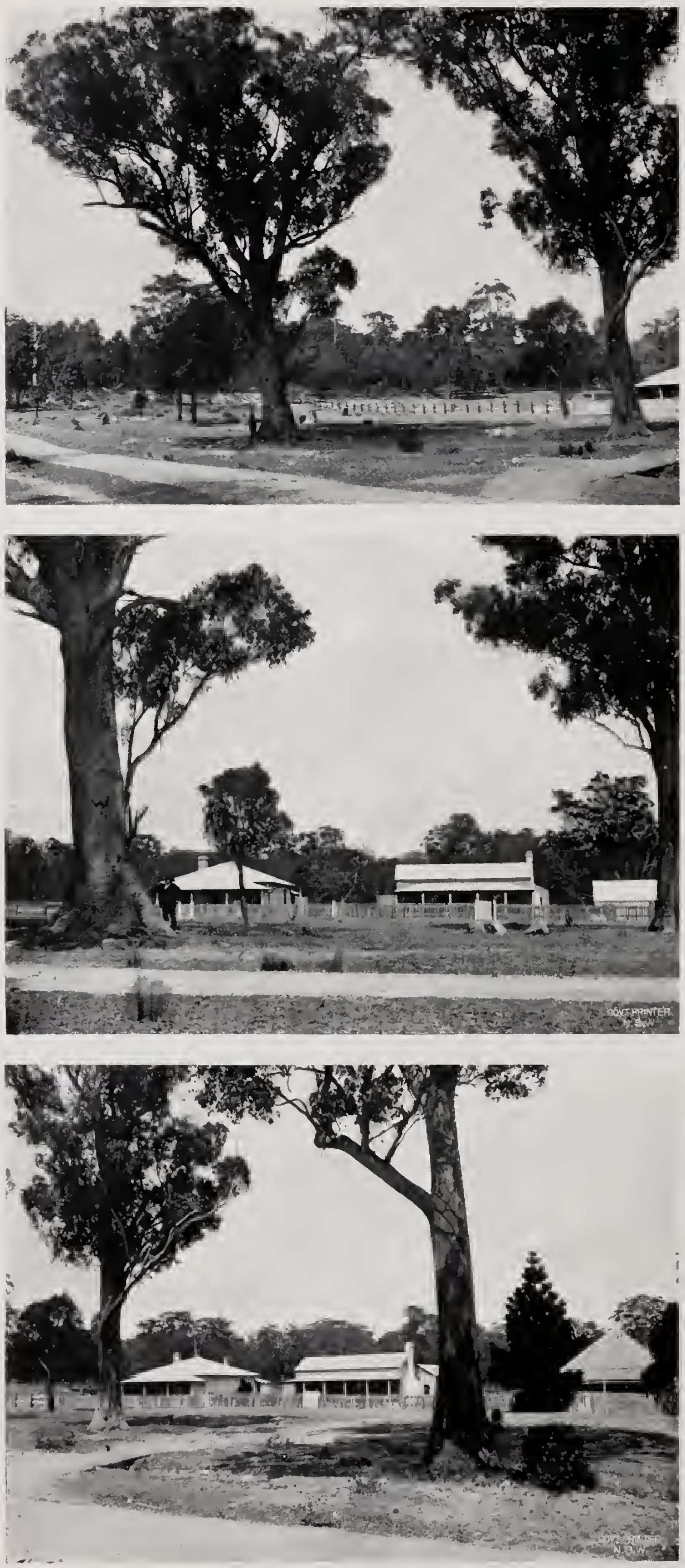
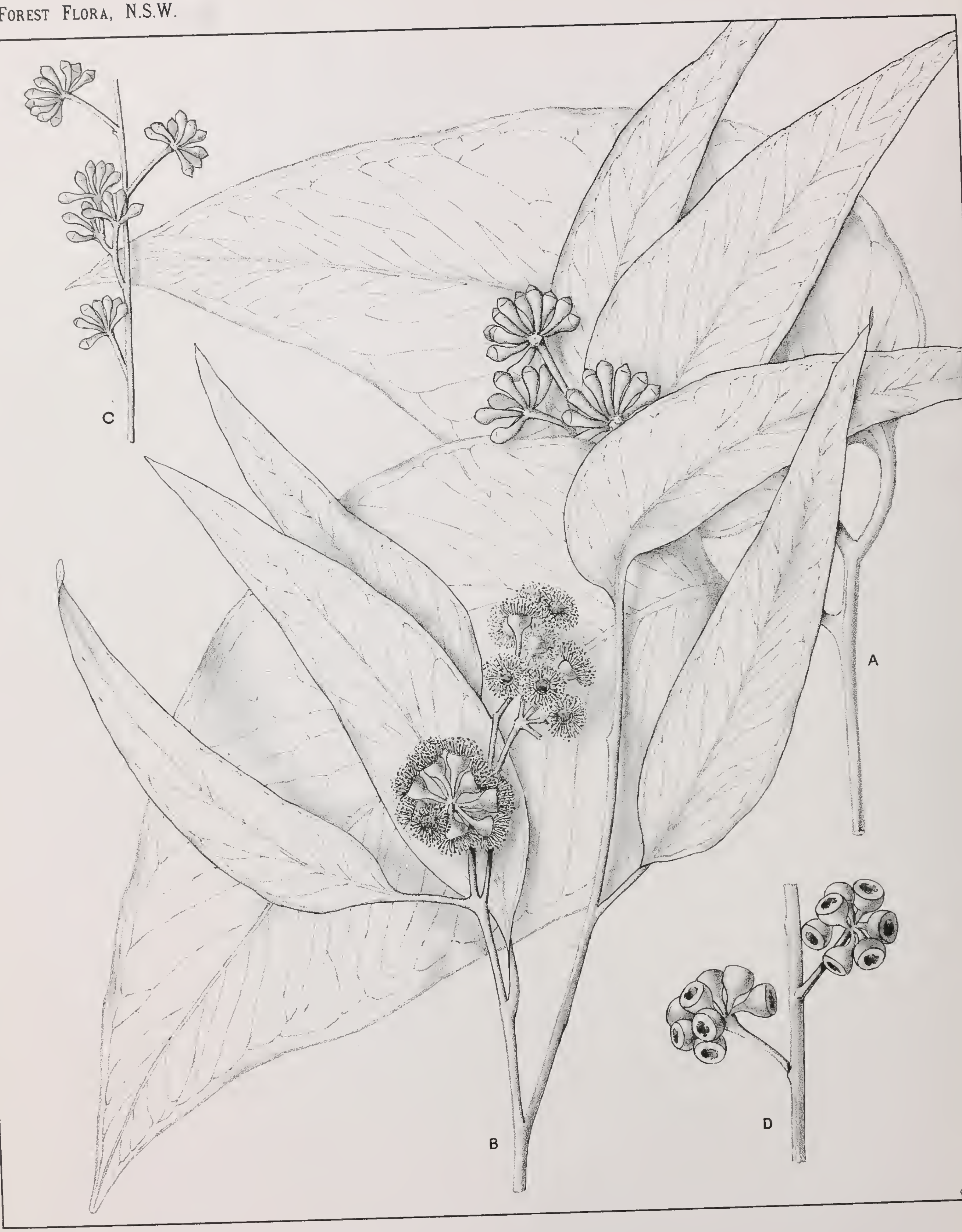
* "The Forest Vegetation of Central and Northern New England in connection with Geological Influences." *Journ. and Proc. Roy. Soc. N.S.W.*, xi, 21. 1877.



E. C. Andrews, photo.

THREE VIEWS OF *E. Andrewsi*, MAIDEN. WILSON'S DOWNFALL, N.S.W.

[The tree to the left in the bottom photo. is *E. Deanei*, Maiden.]



BLACKBUTT OR PEPPERMINT.

(*Eucalyptus Andrewsi*, Maiden.)

Size.—A tall and a large tree, on an average, say 80 feet in height, with a stem diameter of 2–3 feet.

On the Bulldog Hill, 3,000 feet (between the Timbarra and Clarence Rivers), it attains a diameter of at least 8 feet, and the height of large trees is most likely from 150 to 180 feet. Here it consorts with true Blackbutts (*E. pilularis*), and Forest Oaks (*Casuarina torulosa*), which, even at times, rise 100 feet, and 50 or 60 feet without a branch.—(E. C. Andrews.)

Writing from Drake to Mr. Cambage, Mr. Andrews says:—

One tree we measured 20 feet in circumference, about 80 to 100 feet to first limb, and from 150 to 180 feet high (guess). Another, 23 feet circumference, 170 feet high (?). Another we measured 25 ft. 6 in. round butt (4 feet above ground). Blackbutt top, but about 150 feet high then. I suppose there were from 50 to 100 from 18 to 20 and 21 feet in circumference.

Habitat.—Plentiful in many parts of New England, N.S.W.

The species seems to attain its greatest size around Tingha. Plentiful on belts of porphyritic felsite.—(R. H. Cambage.)

Grows generally on granitic soils, but it frequently occurs on the junction of basaltic soils with those of poorer formation.—(W. Christie.)

North and east of Tingha (about 2,700 feet above sea-level), and on the roads to Inverell and Guyra.—(R. H. Cambage, J. H. M.)

Howell.—(J. L. Boorman, and J. H. M.)

Following are New England localities:—

Wilson's Downfall, Undercliffe, Great Dividing Range west of Bolivia and Deepwater. From the 10-mile to the 25-mile pegs along the Glen Innes-Grafton road. Along the Glen Innes-Glen Elgin track, Kingsgate, Oban, Tingha, Drake, Glen Innes to Inverell road, &c., &c. Broadly, it selects the high rocky table-lands of New England, especially the eastern edge (if rocky and poor soil like granite), and also the large mesas which extend easterly of the mesas proper, as, for example, that large block of high land, 50 miles in length, between the Rocky (Timbarra) and Clarence Rivers.—(E. C. Andrews.)

It extends to Queensland.

The following specimens belong, in my opinion, to *E. Andrewsi:* The Peppermint of Maiden's Dorrigo Report; summit of Mount Seaview and adjacent mountains; Tenterfield district; "White Limb" of Glen Innes; "Peppermint," Cobark, on high ground (A. Rudder); Upper Williams River (A. Rudder); Moore's Reef, on top of hill going to the Hole. Tree in general appearance very much like *E. piperita*. Of this tree it is said:—

Height, about 120 feet; diameter, about 3 feet, with spreading and irregular smooth upper branches to size of man's leg. Soil stony, with blackish mould. 11/10/93.—(A. Rudder.)

Propagation.—From seed. It is a useful addition to the list of species capable of withstanding a considerable amount of winter cold.

EXPLANATION OF PLATE 79.

A. Sucker leaves from Drake (E. C. Andrews, 1904).
B. Flowering twig.
C. Small buds from Tingha (R. H. Cambage, 16/10/03).
D. Fruits.

Three photographs of the tree at Wilson's Downfall (E. C. Andrews).

No. 79.

Casuarina inophloia, F.v.M. and Bailey.

The Thready-barked Oak.

(Natural Order CASUARINACEÆ.)

Botanical description.—Genus, *Casuarina,* already explained, see p. 74, Part XIII.

Botanical description.—Species, *C. inophloia,* F.v.M. and Bailey in *Chemist and Druggist,* April, 1882, under the title " Remarks on a new Casuarina."

Arborescent ; aged bark disintegrating into long narrow somewhat fibrous particles.

Branchlets very thin, slightly streaked, not prominently angular, almost imperceptibly downy.

Whorls of rudimentary leaves.—Bearing 7–9 semi-lanceolar acute teeth.

Fruit-amenta.—Cylindrical-ovate, or sometimes shortened to an almost globular form, constantly depressed at the summit.

Axis.—Densely beset with straight pale-brown hair.

Bracts.—Obliterated.

Bracteolar valves of the fruitlets.—Rather small, semi-ovate, nearly blunt, short-exserted, enlarged by a very thick dorsal, rather angular appendage of vertical slight cleavage, and of nearly as much protrusion as that of the valves themselves ; appendages and valves very slightly downy.

Nutlets.—(When young) pale, the terminating membrane (then) about as long as the nucleus.

In the southern portions of Queensland, near Roma, F. M. Bailey ; near Toowoomba, C. Hartmann.

This species is nearest allied to the common southern *C. distyla,* especially to that variety which, on account of its slender branchlets and small bracteolar valves, was formerly distinguished as *C. paludosa.* Our new species is, however, of taller growth, the bark is less solid, the branchlets are neither prominently streaked nor conspicuously furrowed, the fruit axis is very hairy, the bract under each fruitlet is not distinctly developed, the dorsal protuberance of the bracteolar valve is comparatively much thicker, and by partial incision somewhat doubled. Furthermore, the fruitlets below their membraneous appendage are in age probably not almost black. The flowers of either sex (not yet seen) may also be different. From *C. corniculata* the species now described is already separated by wanting distinct bracts, and by the dorsal appendage of the bracteoles not being long and sharply pointed. But there can be no doubt that our new plant is identical with the one which Dr. Leichhardt passingly mentions under the name of *C. villosa* in the diary of his famous journey overland to Port Essington, p. 49 (1847), as occurring on Robinson's Creek at Expedition Range. Still, Mr. Bailey justly observes that this appellation is misleading, the bark, though very fibrous, not being villous in the accepted scientific sense of that term. It is remarkable that this tree should have escaped notice since Leichhardt's time– a fact demonstrating how much yet needs to be done for the further investigation of the Australian flora, even in long-settled districts, for which researches pharmaceutical gentlemen more especially should render every local aid. (*Op. cit.*)

The reference to *C. villosa* is in "Journal of an overland expedition in Australia from Moreton Bay to Port Essington, during the years 1844–1845," by Dr. Ludwig Leichhardt. At p. 47, he refers to "a new species of forest oak, which deserves the name of *Casuarina villosa*, for its bark looks quite villous." He was collecting on Robinson's Creek, South Queensland, a day or two before arriving at his Expedition Range.

C. corniculata, F.v.M., is a West Australian species.

Botanical Name.—*Casuarina*, already explained, see p. 79, Part XIII; *inophloia*, from the two Greek words *in*, *inos*, fibre and *phloia* bark—the fibre-bark.

Vernacular Names.—It is called "Thready-barked Oak," and likewise "Stringy-bark Oak." Mr. Andrew Murphy calls it "Porcupine Oak," and says the name is owing to numerous prickles ½ inch to 1 inch long, set downwards. Stroking the bark upwards, one encounters the prickles, and not if rubbed downwards. The word "porcupine," however, gives an exaggerated idea of the rigidity and coarseness of the individual fibres of the bark; but perhaps, reference is also made to the raised medullary rays.

Bark.—The bark is very remarkable. It is looser than that of the Stringy-barks (*Eucalyptus*), and a mass of material like pine-needles could readily be pulled off the bark. So readily separable are these outer layers of the bark that it is difficult to convey a log far without rubbing off these fibrous layers, unless special steps be taken to protect the bark by wrappers. The fibrous bark reminds one distantly of Kitool fibre (*Caryota urens*), an Indian palm.

Timber.—Rich red or purple brown. It has the largest medullary rays in the genus.

Mr. Bailey writes of this species in his "Catalogue of the Woods of Queensland."—(Melb. Exhib., 1888) :—

> Wood, very beautiful, of a reddish colour, but with numerous dark marks.

These dark marks are the medullary rays, which appear in the cross-section as thick dark lines from just above 1 to 1½ mm. in thickness, radiating from the centre to the bark and penetrating even half-way through the fibrous bark, where they form partition walls between which the fibres are packed. In the tangential cut the medullary rays appear as interrupted perpendicular thick lines, and in the radial cut as large, irregular blotches.

Long straight pieces of stem are rare, so that it would be very difficult to procure a good supply of this remarkable wood for cabinet-making purposes.

But the most remarkable character about this timber is the difficulty of burning it. Of course most *Casuarina* timbers form the best fuel woods in Australia, but the Thready-barked Oak is such a bad burner that it owes its preservation to that character. Not only do the trees resist the ravages of the bush-fires to which their fibrous barks particularly subject them, but man does not trouble to fell them for fuel. The main forest of this species that I saw near the town of Warialda would have been cut down long ago for local requirements but for the character I have mentioned.

Size.—A small tree, 10 to 30 feet high, with a diameter 6–12 inches, and with pendulous branches. It is like *C. distyla*, stooling in habit in the early stage, eventually growing into a single stem, generally much crooked and branched, with a wide spreading top.

Habitat.—This species is confined to Northern New South Wales and Southern Queensland.

QUEENSLAND.

In the description we have, near Roma (F. M. Bailey), near Toowoomba (C. Hartmann), and I think we may correctly add Leichhardt's locality. In the *Catal. Queensland Forestry Museum*, 1904, we have—

> Trees fairly numerous on poor sandy and stony land in the neighbourhood of Miles and Yuelba and other western parts.

NEW SOUTH WALES.

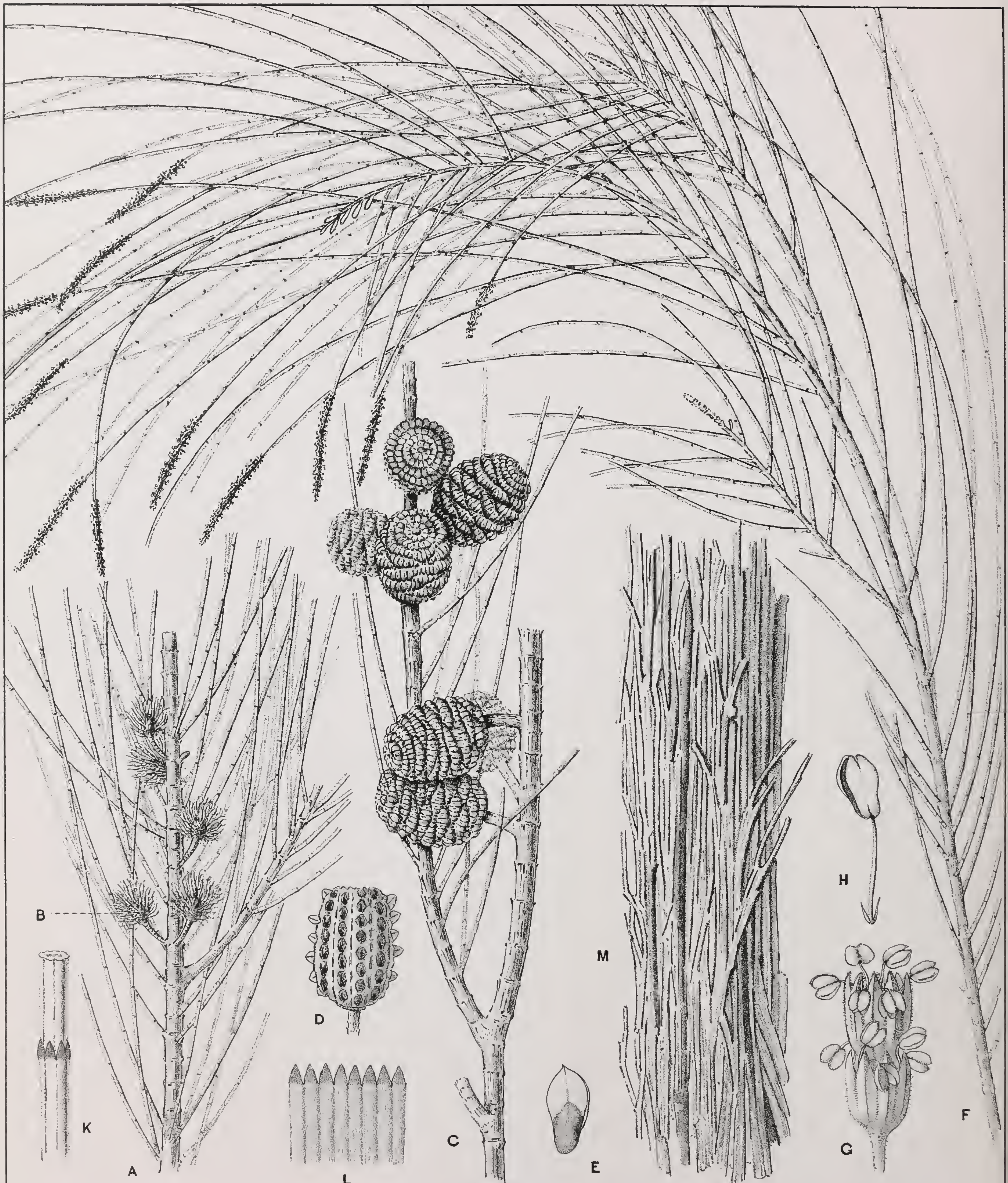
I received it from Emmaville, in July, 1894, from a correspondent whose name I have forgotten. It does not appear to be abundant there, as my collector only found one tree there in 1903, and he could not find any in 1905.

Mr. Andrew Murphy said he had collected it near Jennings. I do not think he is mistaken, but I have no specimens from that locality.

I still did not know where to get N.S.W. specimens for my correspondents, and wrote to my friend, Rev. H. M. R. Rupp, of Warialda, asking him if he knew. He replied that it grows in great abundance about Warialda, and that he has seen it about Coolootai, Yetman, and Wallangra. I visited Warialda, and found the species very abundant, so that it is not so excessively rare in New South Wales as I had imagined it to be.

It frequents sterile ironstone, gravelly ridges.

Other oaks are scarce in the district. I noticed *C. Luehmanni*, R. T. Baker, near Warialda.



THE THREADY-BARKED OAK.

(*Casuarina inophloia*, F.v.M and Bail.)

EXPLANATION OF PLATE 80.

A. Branch with pistilliferous flowers.

B. Pistilliferous flowers.

C. Branch with ripe cones.

D. Ripe cone, shedding seed (winged nuts).

E. Winged nut, containing seed.

F. Branch with staminiferous flowers.

G. Part of the spike containing the staminiferous flowers.

H. A staminiferous flower, consisting of a single stamen between two floral bracts.

K. Portion of branchlet, showing portions of two joints.

L. Whorled bracts, representing leaves, opened out.

M. The bark.

All from trees growing near Warialda, N.S.W.

Sydney: William Applegate Gullick, Government Printer.—1906.

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39.—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*):—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—The Mugga; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.).

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
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THE FOREST FLORA

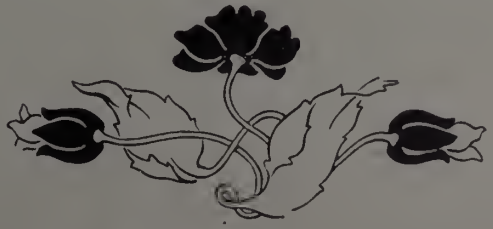
OF

New South Wales.

J. H. MAIDEN.

VOL. III. PART 2.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.



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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXII.

*Published by the Forest Department of New South Wales, under authority of
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No. 80.

Flindersia collina, F. M. Bailey.

The Hill Flindersia.

(Natural Order MELIACEÆ.)

Botanical description.—Genus, *Flindersia.* (See Part X, p. 209.)

Botanical description.—Species, *F. collina,* Bailey, in *Queensland Agric. Journ.,* III, p. 354 (Nov. 1898).

A large* forest tree, the bark falling off in rather larger patches than in allied species, but leaving the same pale-coloured patches upon the stem; branchlets corrugated, and, when young, more or less covered with short ferruginous hairs.

Leaves.—Opposite, impari-pinnate, petioles about 1 inch long, flattened, the edges thin, but scarcely winged.

Leaflets.—Three to five, obovate-cuneate, sessile, the terminal one sometimes 3 inches long and $\frac{3}{4}$ inch broad, the lateral ones smaller, equilateral; apex obtuse, truncate, often emarginate, parallel lateral nerves erecto-patent, numerous, often very prominent on the upper side, which is very glossy, underside thinly hoary or pale-coloured.

Rhachis.—Slightly winged.

Panicles.—Terminal, about $2\frac{1}{2}$ inches long and nearly as broad, densely branched, usually on very short peduncles, more or less covered with a close stellate pubescence.

Flower-buds.—Globose, slightly five-angled, calyx small.

Petals.—Imbricate, ovate-oblong, thick in the centre, hairy on both sides.

Filaments.—Shorter than the petals, glabrous, rather thick and angular.

Anthers.—Ovate-cordate.

Fruit.—Echinate, oblong, $1\frac{1}{2}$ to 2 inches long, dividing into five separate valves.

Habitat.—Ranges of southern parts of Queensland.† Wood hard, close-grained, yellow, strong, and durable. In Bailey's Cat. Ql. Woods, No. 73c, given as *F. Strzeleckiana,* var. *latifolia.*

Botanical Name.—*Flindersia,* already explained, Part X, p. 210; *collina,* Latin, "situated on a hill" or "growing on a hill," the tree being often found on hill-sides.

Vernacular Names.—This tree bears a number of local names, more or less loosely used. It is sometimes called "Stave-wood," and also "Yellow-wood," but the first is already applied to a large number of trees, and the second is already firmly attached to *F. Oxleyana.* (See Part XIX of this work.)

Because of its long trunk in certain situations, the name "Long Jack" is also applied to it, but this name has been already given to *F. Oxleyana* and other trees.

---

* The original description says: "A small tree." If this be really correct, as regards Queensland, it may be stated that it attains a far larger size in New South Wales.

† Since found in New South Wales.

I have suggested the name "Hill Flindersia" for want of a better.

Aboriginal Name.—I know of none.

Leaves.—The most obvious characteristic of this tree is the distinctly winged leaflet of a shortly pinnate leaf.

Bark.—The bark is mottled, but not flaky as in *F. australis*, the Teak. In young trees it is bluish-green in colour.

Fruits.—The smallness of the fruits is an obvious character in this species.

As the valves open, their raw edges take on a pretty purple colour, which is very ornamental, the bright green of the outside of the fruits contrasting pleasingly with the purple. This is the only species of *Flindersia* in which I have noticed any marked coloration as regards the fruits. The colour of the inside of the valves and of the deciduous placenta is yellow to orange.

I may take the opportunity of drawing attention to the desirability of recording in detail the colours of the flowers and fruits of many plants. Often this work can only be done by dwellers in the bush, or collectors on the spot. The colours are often altered, or quite changed, by continued exposure, on the plants, or by drying as herbarium specimens. I have recorded such notes wherever I could; but it is surprising how defective our knowledge is in this respect. It, of course, specially applies to small flowers. Boiling out again, which botanists practise for studying the structure of the flower, does not bring back the colour.

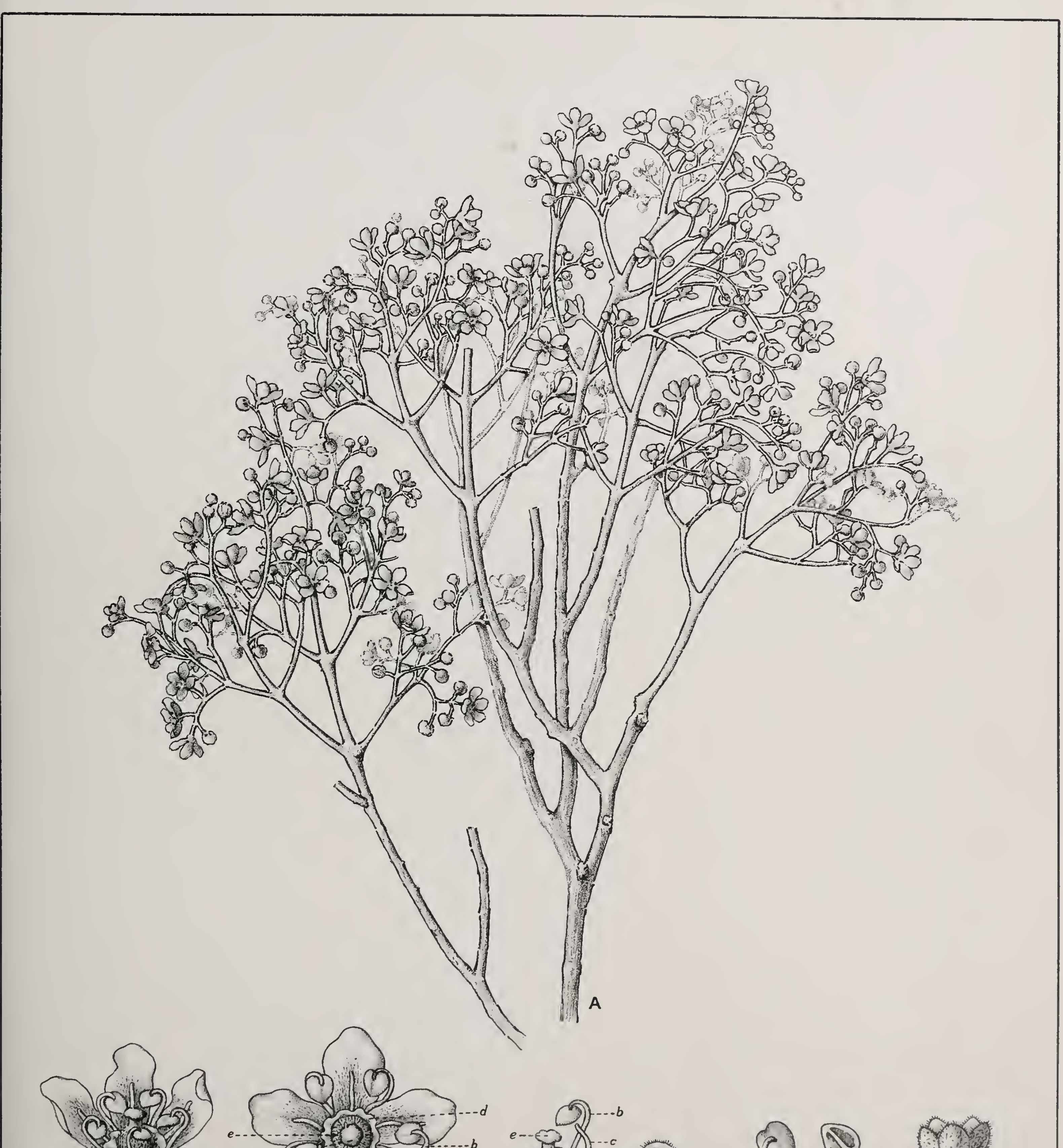
Timber.—Very hard, pale yellow, tough in grain, very fissile, very heavy, slightly inferior to Teak (W. Dunn and J. L. Boorman).

All *Flindersia* timbers are more or less valuable; and that of the present species appears to form no exception. At the same time, it is but a recently recognised species, and we require further observations before we can determine its precise value.

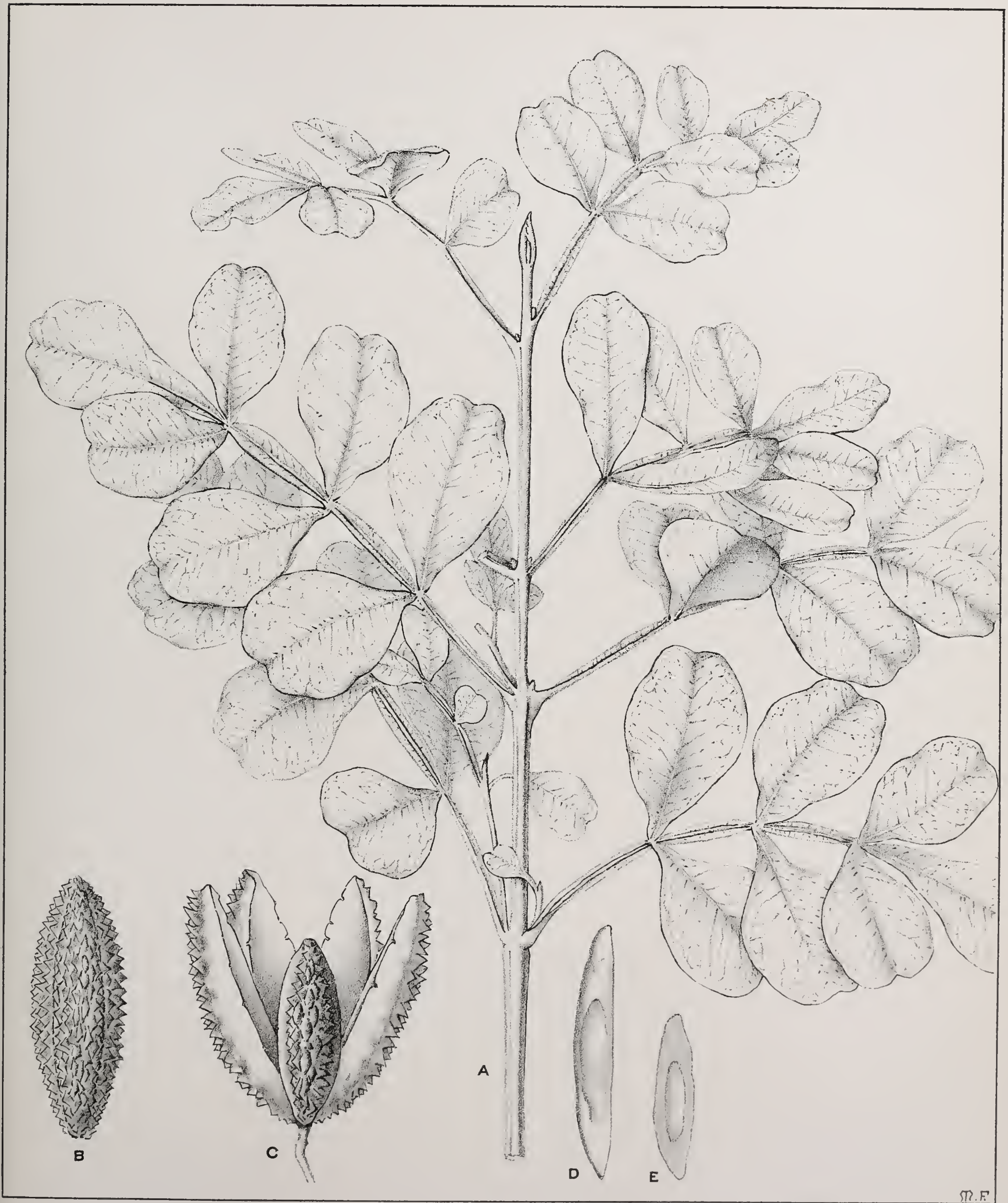
This fine timber-tree was only recognised in 1905 as belonging to the flora of New South Wales! Should this not be an incentive to discover other trees in the little-known forests of this favoured State?

Size.—A tall tree of 80–120 feet high, with a girth of 6–10 feet, say 2–3 feet in diameter.

Habitat.—Growing on the foot hills in dense scrubs. It appears to be a very rare tree. It is confined to southern Queensland and northern New South Wales, so far as is known at present. As far as New South Wales is concerned, it was first brought under my notice by Mr. W. Dunn, Forest Guard, Acacia Creek, Macpherson Range. He gives a locality as Tooloon Ranges.



THE HILL FLINDERSIA.
(*Flindersia collina*, F. M. Bailey.)



THE HILL FLINDERSIA.
(*Flindersia collina*, F. M. Bailey.)

ADDENDA (*Flindersias*).

Information is desired in regard to the following trees :—

The following extract is taken from Mr. Charles Moore's list of Indigenous Timbers of the Northern Districts (London Exhibition of 1862).

1. XIII. *Flindersia sp.*, "Wobul" of the aborigines ; Richmond River. A handsome, moderate-sized tree, unknown to the settlers, although occurring in most of the brushes.

2. *Flindersia Selwyniana*, F.M. Diameter 12 to 16 inches ; height, 60 to 70 feet. This species occurs plentifully in the scrubs near the coast. It is of slender growth. The wood is soft, and soon perishes when exposed. (*Catal. of the Natural and Industrial Products of Queensland*, London Exhibition, 1862 ; specimens of woods forwarded by Walter Hill, Director, Botanic Garden, Brisbane.)

I wrote to the late Baron von Mueller on the subject. He replied, "*Flindersia Selwyniana* not so named by me, and name not traceable here."

It may, of course, not be a Flindersia.

EXPLANATION OF PLATE 81 (FLOWERS).

A. Flowering branch.

B. Flower.

C. Expanded flower showing—
  (*a*) Petals.
  (*b*) Stamens.
  (*c*) Staminodia.
  (*d*) Disc.
  (*e*) Ovary.
  (*f*) Stigma.

D. Part of flower showing—
  (*a*) Disc.
  (*b*) Stamens.
  (*c*) Staminode.
  (*d*) Ovary.
  (*e*) Stigma.

E. Transverse section of ovary.

F. Stamens.

G. Calyx.

EXPLANATION OF PLATE 82 (LEAVES AND FRUIT).

A. Leafy twig.

B. Fruit unopened.

C. Capsule opening septicidally.

D. Deciduous placenta.

E. Winged seed.

No. 81.

Eucalyptus obliqua, L'Hérit.

The Broad-leaved Messmate.

(Natural Order MYRTACEÆ.)

Botanical Description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical Description.—Species *E. obliqua,* L'Héritier, *Sert. Angl.*, t. 20, p. 18, with t. 20.

An immense tree, attaining from 150 to 250 feet, although flowering when young and small; with a very tenacious, rugged, fibrous bark.

Leaves.—In the usual form mostly ovate-lanceolate, falcate, and very oblique at the base, more or less acuminate, 4 to 6 inches long, thick, with very oblique distant anastomosing veins, the intramarginal one at some distance from the edge.

Peduncles.—Axillary or lateral, terete or slightly compressed, bearing each an umbel of about four to eight flowers.

Buds.—Shortly clavate.

Calyx-tube.—Fully three lines diameter, rather short, and tapering into a pedicel usually as long or longer.

Operculum.—Hemispherical or flattened, very obtuse, shorter than the calyx-tube.

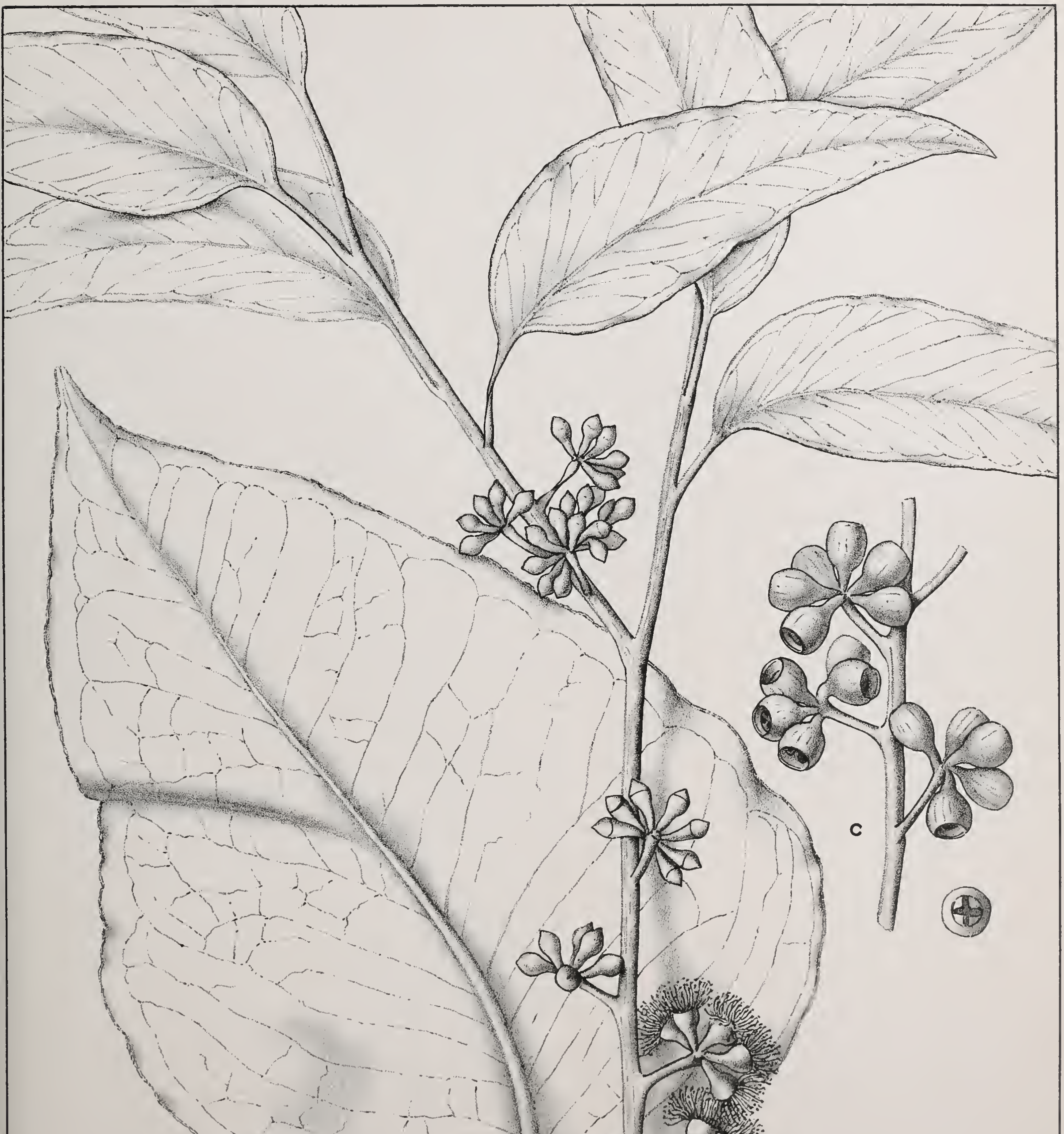
Stamens.—Fully three lines long, all perfect; anther-cells diverging or at length divaricate and confluent at the apex.

Ovary.—Flat-topped.

Fruit.—More or less pear-shaped, truncate at the top, three to five lines diameter, slightly contracted at the orifice, the rim rather broad and concave, the capsule more or less sunk. (B.Fl. iii, p. 204.)

This is the first species of Eucalyptus known to science, it having been originally collected by David Nelson, assistant botanist on Cook's Third Voyage, 1776–9, and described by L'Héritier in 1788. At the time of its collection, and for long afterwards, Tasmania was looked upon as part of Australia; moreover, like other early species, it was badly described, and the specimens themselves were imperfect and not easily accessible. The result was that it was not recognised, until the sixties, that *E. obliqua* is the common Tasmanian Stringybark. Hooker, in his *Flora of Tasmania,* was not aware of its identity, and consequently in that classical work it is not mentioned, but a new species, *E. gigantea,* takes its place.

In Part II of my "Critical Revision of the Genus Eucalyptus" (Government Printer, Sydney, 1903) will be found a reproduction of the first illustration of this plant, together with additional notes on the botanical history of this species, and other details which are not reproduced here.



THE BROAD-LEAVED MESSMATE.

(*Eucalyptus obliqua*, L'Hérit.)

Botanical Name.—*Eucalyptus*, already explained, Part II, p. 34; *obliqua*, Latin, oblique. It is a coarse-foliaged tree, by which characteristic alone it can usually be distinguished from those species with which it is usually associated, or with which it is likely to be confused. Its strikingly oblique, unsymmetrical leaves have, no doubt, given origin to its name. Obliquity is a character of nearly all Eucalyptus leaves, but in the species under consideration, and in *E. capitellata*, it is particularly observable.

Vernacular Names.—It is usually known as "Stringybark" in Tasmania and South Australia, and to a less extent in Victoria; in the last State, however, it is usually known as "Messmate," because it is associated or mess-mates with other Stringybarks and fibrous-barked Eucalypts. The same name is in use in southern New South Wales, as for instance, at Sugarloaf Mountain, Braidwood, and at Tantawanglo Mountain, near Cathcart. Apparently this is the most widely used name for it in New South Wales, and the term "Stringybark" does not seem to be usually applied to it in this State.

Because it is usually rough-barked to the ends of the branches, it sometimes goes by the name of "Woolly-topped Messmate" in the Braidwood district (Monga, &c.). Other names are "Bastard Stringybark," "Woolly Butt," "Woolly Bark," and "White Stringybark," all in use in New England, New South Wales.

Synonyms.—The accidental suppression of the name *E. obliqua*, through ignorance of L'Héritier's plant, has already been referred to.

Because it is so widely diffused, and the early botanists were ignorant as to the limitations of many species of this genus, quite a crop of synonyms has gathered round it. For a list of them, with explanatory notes, see my "Critical Revision of the Genus Eucalyptus," Part II, p. 57.

Leaves.—The coarseness and obliquity of the foliage has already been referred to.

Bark.—Rough-barked to the ends of the branches; the bark of the trunk and branches is decidedly fibrous, but the fibres are not so clean and tenacious as those of the true Stringybarks, and the bark is not so suitable for roofing.

Timber.—That from New South Wales localities is a rather inferior, coarse, open-grained, porous wood, liable to shrink and warp. It is not esteemed for public works in New South Wales. Its open nature may be, at least in part, a consequence of rapid growth, for which, according to several authorities, *E. obliqua* has the reputation.

It has been used in the Braidwood and Cooma districts for many years for building purposes. In Victoria and Tasmania it is largely used, and a recent official publication of the latter State says: "It is our most valuable wood." In considering the value of this observation, it should, of course, be borne in mind that neither of these States possesses a series of excellent timbers such as New South Wales can boast of. At the same time it is quite possible that Tasmanian and Victorian grown timbers of this species are superior to that grown in New South Wales. Howitt, a leading Victorian authority, groups it as a "second-class timber," adding that

> Although a fairly durable and useful timber, it has generally the fault of being more or less full of gum-veins, and is thus unsuitable for many purposes.

Another authority states :—

> Although of an inferior class, it is used for a great variety of building purposes, notwithstanding some liability to warp or twist. . . . . Supplies a good deal of second-class sawn timber in the market.—(Mueller, in *Cat. Tech. Mus.*, Melbourne.)

As this work seeks to impartially report on the qualities of the products of the various species, in whatever State they are produced, some lengthy statements in regard to Tasmanian-grown timber are given at this place.

Following is a report by Mr. Allan Ransome, of London, on a Tasmanian sample (see *Kew Bulletin*, May, 1889) :—

> A very strong, tough wood, with a straight grain, in appearance somewhat resembling American Ash. From its great strength and toughness it is well adapted for carriage, cart, and waggon building, wheel-work, and agricultural machinery, as well as for the framing of railway carriages and trucks. It is also a valuable wood for the stronger description of building constructions, and would make excellent railway sleepers. From the peculiar strength of the fibre of the grain, it will not maintain a good surface, as, even when perfectly dry, the grain rises, so as to render it impossible to polish it successfully.

An official report says :—

> Stringybark can be obtained in patches all over Tasmania, but is most abundant in the south; like the Blue Gum (*E. globulus*) it can be got of any reasonable length or size. It is of quicker growth than the gum, and is of a lighter and milder nature generally. The timber is much used in Tasmania and in the adjacent colonies for house-building, &c. To ensure durability, the wood requires fair seasoning. The different varieties are :—Gum-top Stringybark, Brown and White Stringybark (the brown being the older growth). The White Stringybark makes good palings and shingles.

Another official report says :—

> *Eucalyptus obliqua* (Stringybark) is our most valuable wood. It differs from and is better than the Stringybark of Australia. The timber is light-coloured, and varies considerably from a brown wood, resembling oak, to a much lighter-coloured wood, resembling ash; and because of the great variety of its uses and its abundance, is more valuable, economically, than Blue Gum. The bark might be made a source of income, as it is suitable for the manufacture of paper.

The timber, as I have already hinted, appears to be more valued in Tasmania than on the mainland; its utilisation, as a paper-making material, is not likely to have any commercial importance.

The following account of *E. obliqua* timber is taken from Mr. A. O. Green's pamphlet on "Tasmanian Timbers" (1902). It and the Blue Gum (*E. globulus*) are the two most valuable timbers of Tasmania, hence the comparison by Mr. Green and by the author already quoted :—

> Stringybark trees are very much more widely distributed through the island than the Blue Gum (*E. globulus*), growing over large tracts of poor, hilly country. They attain to an immense size—up to

300* feet in height, and from 2 to 10 feet in diameter. The wood is, on the whole, of a lighter colour than Blue Gum, and varies from a pale straw to a reddish-brown. In appearance Brown Stringybark is somewhat like oak, and it would be a difficult matter for most people to distinguish a picture-frame made of Stringybark from one made of oak. The timber varies considerably, according to the situation and soil in which the tree grows. In appearance it is freer than Blue Gum, but lacks the purplish tint, and is more subject to gum-veins. It is the most general timber for all sorts of constructive work in Tasmania. It makes excellent piles, especially for fresh water, but is not considered quite so good as Blue Gum for salt water, being more subject to the attacks of the teredo. It is also used for shipbuilding, the construction of wharfs and bridges, and for railway sleepers, for the dado, flooring, and fitting of houses, and for furniture; it is also an excellent wheelwrights' wood. When polished it very much resembles oak, but has a more sparkling grain; it has a very pretty effect when used for a ballroom floor, or for wainscotting.

Besides being sawn for almost every purpose, Stringybark is split into fence rails, palings, and shingles. It is certain that if this wood and the Blue Gum, properly prepared, were exported to London, a ready sale would be found for it, for the construction of carts and vans. It would very well take the place of English oak and ash used for this purpose, which are every year becoming scarcer. In an International Exhibition a Stringybark sleeper was shown, by the Tasmanian Government, that had been twenty-five years under traffic. The usual life of this timber, in bridges, is from twenty to twenty-five years; sleepers average about fourteen years; and none of the Government railway buildings, some of which were built twenty-seven years ago, chiefly of this timber, have yet been renewed.

Specimens of this timber from Bullarook Forest, Victoria, were examined by Mr. F. A. Campbell (*Proc. R. S. Vict.*, 1879). His values of the tensile strength in pounds per square inch are: 8,500, 8,500, and 8,200. They broke with a short fracture. The wood was well seasoned, clean, but not quite free from shakes. Mr. Campbell, however, remarked that this should not affect its tensile strength to any extent. It was known locally as Messmate. Rankin gives the following particulars in regard to the timber of *E. gigantea* (*obliqua*):—Modulus of elasticity in pounds on square inch, 1,709,000; modulus of rupture, 13,000; weight, 54 lb. per cubic foot.

EXPERIMENTS on the transverse strength of the wood of *E. obliqua* by Baron Mueller and J. G. Luehmann. The specimens were 2 feet long and 2 inches square.

Deflection.		Total weight required to break each piece.	Value of strength $S=\frac{LW}{4\,BD^2}$	Specific Gravity.	
With the apparatus weighing 780 lb.	At the crisis of breaking.			Air-dried.	Absolutely dried.
Inches.	Inches.	lb.			
·12	·50	2,053	1,540	1·045	·867
·14	·48	1,776	1,332	·935	·783

Some experiments by Mr. James Mitchell on Tasmanian stringybark will be found in *Proc. Roy. Soc. V. D. Land*, II, Part I, p. 124 (1852).

It has also been tested by Mr. James Mann ("Australian Timber," 1900), and by Mr. A. O. Green ("Tasmanian Timbers," 1902).

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* This may be so, but I like particulars of all trees whose measurements are reported to approach 300 feet.

Size.—It attains the dignity of a large tree. So far as I know, it attains its greatest development in Tasmania. In the first part of the letters of Quaker Missionary Backhouse there are some measurements of large stringybark trees (*Eucalyptus obliqua*) on the Emu River. I content myself with quoting three. The first was 45 feet in circumference, and the supposed height 180 feet; the top broken. The second was 55 feet in circumference; supposed to be upwards of 200 feet high. He measured, near Hampshire Hills, two trees that had been felled for splitting into rails, each 180 feet long.

Habitat.—It is found in Tasmania, South Australia, Victoria, and New South Wales.

TASMANIA.

Common in hilly country all over the island, but chiefly in the south.

SOUTH AUSTRALIA.

The late Mr. J. Ednie Brown gives:—Mount Lofty Ranges, near Adelaide; in places upon the southern slopes of the main range running through Kangaroo Island; along the coast from the Glenelg River to Lake Bonney in places around and near Mount Gambier; Mounts Burr and McIntyre Forest Reserves; Cave Range Forest Reserve; in places near Narracoorte, on the Kingston and Narracoorte railway line; and several other districts of less importance in the south-east.

VICTORIA.

It grows in almost all parts of Victoria, excepting the northern areas, from the sea-coast up to about 4,000 feet above the sea. It is specially common in Gippsland.

NEW SOUTH WALES.

It extends from south to north of the State. Its northernmost limit is a matter for further investigation, but it extends nearly to the Queensland border. It is found growing in company with *E. goniocalyx* and other species on the Irish Corner Mountain, Reidsdale, Sugarloaf Mountain, and around Monga, both on the eastern and western fall of those mountains. The trees are fairly abundant, and are to be found growing to a height of from 100 to 150 feet, with a girth of from 6 to 10 feet. In New England (Yarrowitch) it is associated with *E. viminalis.*

Howitt (*Trans. Roy. Soc. Vict.*, II, Pt. I, 1890, p. 92) makes the statement, as regards Gippsland, that "it appears to be essentially a littoral form, but ascends the mountains, &c." The first part of this statement does not appear to hold true in New South Wales. The tree grows right on the top of the ranges with us, and never in the littoral lands, as far as observed. It frequents situations where it can be reached and enveloped in the sea-fogs; in this remote sense alone can the word "littoral" be applied to trees with us. On the Tantawanglo Mountain it grows abundantly, in company with "Cut-tail" and other Eucalypts, at a height of about 3,000 feet above the sea. At Reidsdale it occurs at an elevation of from 2,000 to 2,500 feet, and in New England nearly 4,000 feet.

Southern.—Tantawanglo Mountain (H. Deane and J.H.M.); "Messmate," Candelo (A. Rudder); "Tororago" (? Tarago), Twofold Bay, S.E. Australia, No. 266, S. Mossman. In Herb. Cant. ex herb. Lemann. Doubtless Tarago, *viâ* Braidwood, on an old route to Twofold Bay.

"Woolly-topped Messmate," Irish Corner Mountain, Reidsdale, Sugarloaf Mountain, and around Monga (Forester J. S. Allan).

"Broad-leaf Messmate," Wingello (J.H.M. and J. L. Boorman). Mr. Boorman's note on another occasion is:—"Large trees, wood of a yellowish colour. Fibrous bark to tips of branches. Inner bark pale yellow, leaves large."

"White Mahogany," Wingello (A. Murphy), but not to be confused with either *E. Muelleriana* or *E. acmenoides*.

Northern.—Three miles past Myrtle Scrub (near Yarrowitch, Hastings River to Walcha), one comes across a handsome forest, in basalt country, consisting mainly of a smooth-barked Eucalypt (*viminalis*), and a rough-barked one (*obliqua*). The discovery of the latter species in this part of the State was quite unexpected, and extends its northern range very considerably. The trees were over 100 feet high, and their trunks 3 feet and more in diameter, so that the trees are fine specimens, and not the depauperate forms of mere outliers or pickets. One of my travelling companions (Mr. J. F. Campbell, L.S., of Walcha) stated that this belt of country extended for 30 miles in a general direction of north and south, roughly following the county boundary, and he believed that this species occurred over the greater portion of that county. Mr. Nivison, of Yarrowitch, states it occurs at least as far north as the Clarence River, and also in Callaghan's Swamp. It would be interesting now to collect the species at points intermediate between Braidwood and New England. In the latter district it is sometimes known as "Messmate" and "Bastard Stringybark." At Yarrowitch it is known as "White Stringybark," and has been used for building purposes, *e.g.*, verandah floors; but it lacks durability in the ground. The sucker-foliage is very coarse. I have leaves 6 x 5 inches. (Maiden in *Proc. Aust. Assoc. Adv. Science*, 1898, p. 539.) Upper Williams River (A. Rudder).

The following letter to me is interesting, not only because it brings the recorded localities of the species some miles to the west, but because it embodies other experiences of a well-known observer:—

> The Eucalypt mentioned by you (*E. obliqua*) is abundant here. In this country it is found on poor stony ranges chiefly. It attains a great size, up to 8 or 9 feet or even more in diameter; such trees are usually short-stemmed. It is said it will not last as posts, but I have never been given satisfactory proof as to its unfitness. A mile or two of fence is erected; the posts are mixed, probably split from three or four different kinds of stringybark. Then twelve or fifteen years later, who can say which is the

best? Certainly not the average bushman. It is often, I know, too short to run into rails. I have seen trees that you could not run into 7-foot posts even if struck 6 inches thick. I split a tree of this species 85 feet in length of barrel by 2 feet in diameter; it flowered here last season in January, the trees being great masses of bloom, very noticeable, although distant on the ranges from 1 to 2 miles. It is known here as Woolly-butt, Woolly-bark, or White Stringybark.—(A. R. Crawford, Moona Plains, Walcha, July, 1898.)

I have a specimen collected by Leichhardt, in 1843, at the head of the Gwydir. It is in leaf only, but there is no doubt as to its identity.

Mr. W. Baeuerlen has collected it at Mount Mackenzie, near Tenterfield. This is near the Queensland border, and it may be expected to be found about Stanthorpe, in the latter State.

Woollooma Mountain, parish of Chalmers, county of Durham, land district of Scone.—(H. L. White.)

EXPLANATION OF PLATE 83.

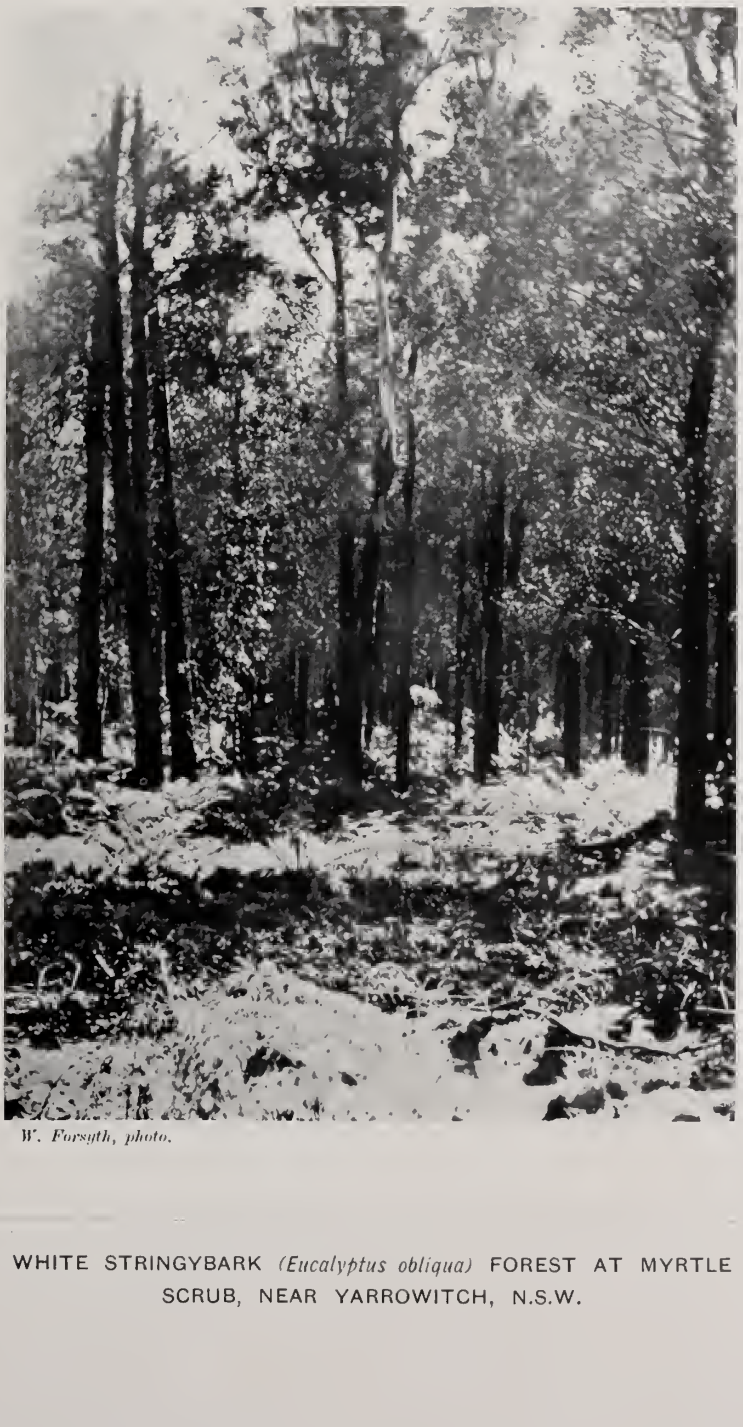
A. Leaf in the intermediate stage, *i.e.*, not the youngest form, but yet not fully mature. Note its great width, and its obliquity.

B. Twig showing buds and flowers.

C. Fruits.

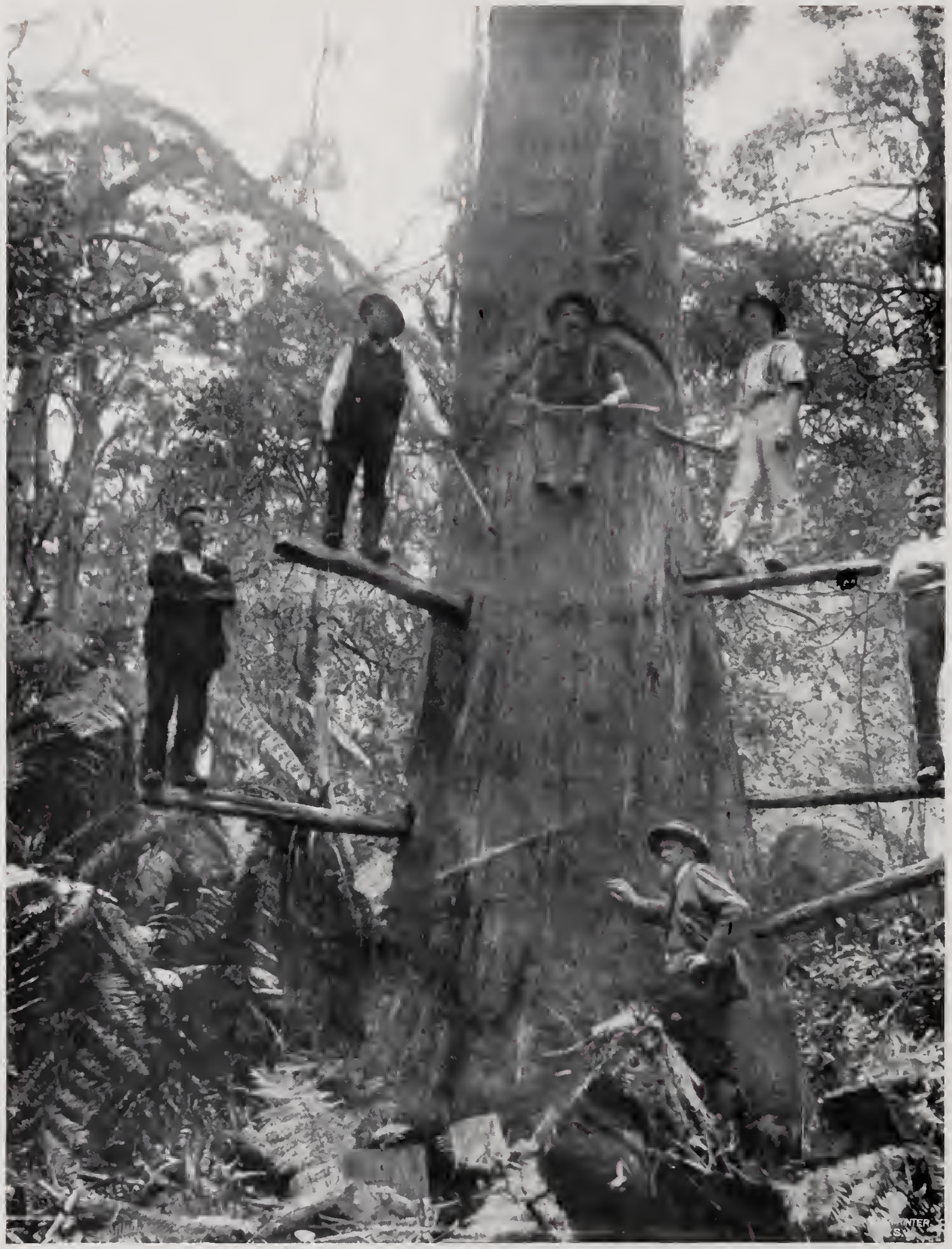
[All drawn from New South Wales specimens,—near Yarrowitch, New England.]

Two photographs, one of the *E. obliqua* forest in the Myrtle Scrub, near Yarrowitch, described on the preceding page, and the other of a large Messmate tree on the Monaro, N.S.W. The latter photograph shows the method, common enough in the United States and Australia, in dealing with big trees, of erecting a staging above the lower, more conical portion of the trunk, so as to fell where the trunk begins to be of even girth.



W. Forsyth, photo.

WHITE STRINGYBARK *(Eucalyptus obliqua)* FOREST AT MYRTLE SCRUB, NEAR YARROWITCH, N.S.W.



Kerry, photo.

FELLING A MESSMATE *(Eucalyptus obliqua)*, MONARO, N.S.W.

No. 82.

Acacia elata, A. Cunn.

The Cedar Wattle.

(Natural Order LEGUMINOSÆ: MIMOSÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. elata,* A. Cunn.

A handsome tree of 60 feet or more, the young shoots often tinged with a golden-yellow pubescence.

Pinnæ.—In 2 to 4 distant pairs, 6 to 8 inches long; leaflets 8 to 12 pairs, lanceolate, acutely acuminate, 1 to 2 inches long, minutely silky; gland wart-like on the petiole, and often small ones at the last pairs of leaflets.

Flower-heads.—Globular, in racemes often 6 inches long, the upper ones forming a large terminal panicle, often silky with a golden pubescence.

Flowers.—Numerous, mostly 5-merous.

Calyx.—Fully half as long as the corolla, obtusely toothed.

Petals.—Smooth, united to the middle.

Pod.—4 to 6 inches long, about ½ inch broad.

Seeds.—Nearly lenticular.—(B.Fl. ii, p. 413).

Allan Cunningham's original description of the species is given herewith for convenience of reference.

205. *A. elata* (Cunn. MS. non Grah.), petiolis paniculisque junioribus aureo-pubescentibus, foliis amplis, pinnis distantibus 2–4–jugis, glandula petiolari verrucæformi jugalibus subnullis, foliolis 8–12–jugis lanceolatis, acute acuminatis utrinque tenuiter sericeis, capitulis breviter pedunculatis, racemis in paniculam amplam subaphyllam dispositis, floribus aureo-pubescentibus, calyce corolla dimidio breviore.—Folia fere sesquipedalia, foliolis sesquipollicaribus.—Shaded ravines, interior of N. S. Wales, *Cunningham.* (Bentham, in *London Journal of Botany,* I, 383, 1842.)

Botanical Name.—*Acacia,* see Part XV, p. 104; *elata,* Latin, exalted, tall. This is amongst the tallest of our wattles.

Vernacular Names.—"Cedar," or "White Cedar Wattle" of the Picton district. "Cedar Creeks" are named after it. I am informed that this species is known as "Black Wattle" in the Kurrajong district. Sometimes it is called "Pepper-tree Wattle." It looks a good deal like the frequently-cultivated Pepper-tree (*Schinus molle*) as regards its foliage and habit.

The name Cedar Wattle has got a great hold, and the name may be recognised. It hardly reminds me of a Cedar, but in the old days any tree with umbrageous, pinnate foliage was a "cedar" of some sort amongst the timber-getters. Comparing it with the figure of the Cedar (Part III of this work), it will be at once seen that the leaflets of the Cedar Wattle are much narrower.

Aboriginal Name.—"Meroan-gauge" of the Illawarra blacks, according to the late Sir William Macarthur.

The late Sir William Macarthur exhibited the following in the Paris Exhibition of 1855, and the London Exhibition of 1862:—

"*Acacia umbrosa*, aboriginal name 'Meroan-gauge,' diameter 15–20 inches, height 40–60 feet."

He had two trees under this name at different times, viz., one with "Large pinnate leaves. Common at Illawarra." This is *A. elata.*

The second was "A handsome specimen, with very broad leaves. Wood yellowish-brown, close and light." This is *A. binervata*, which is the true synonym of *A. umbrosa*, as pointed out by Bentham in B.Fl. ii, 391.

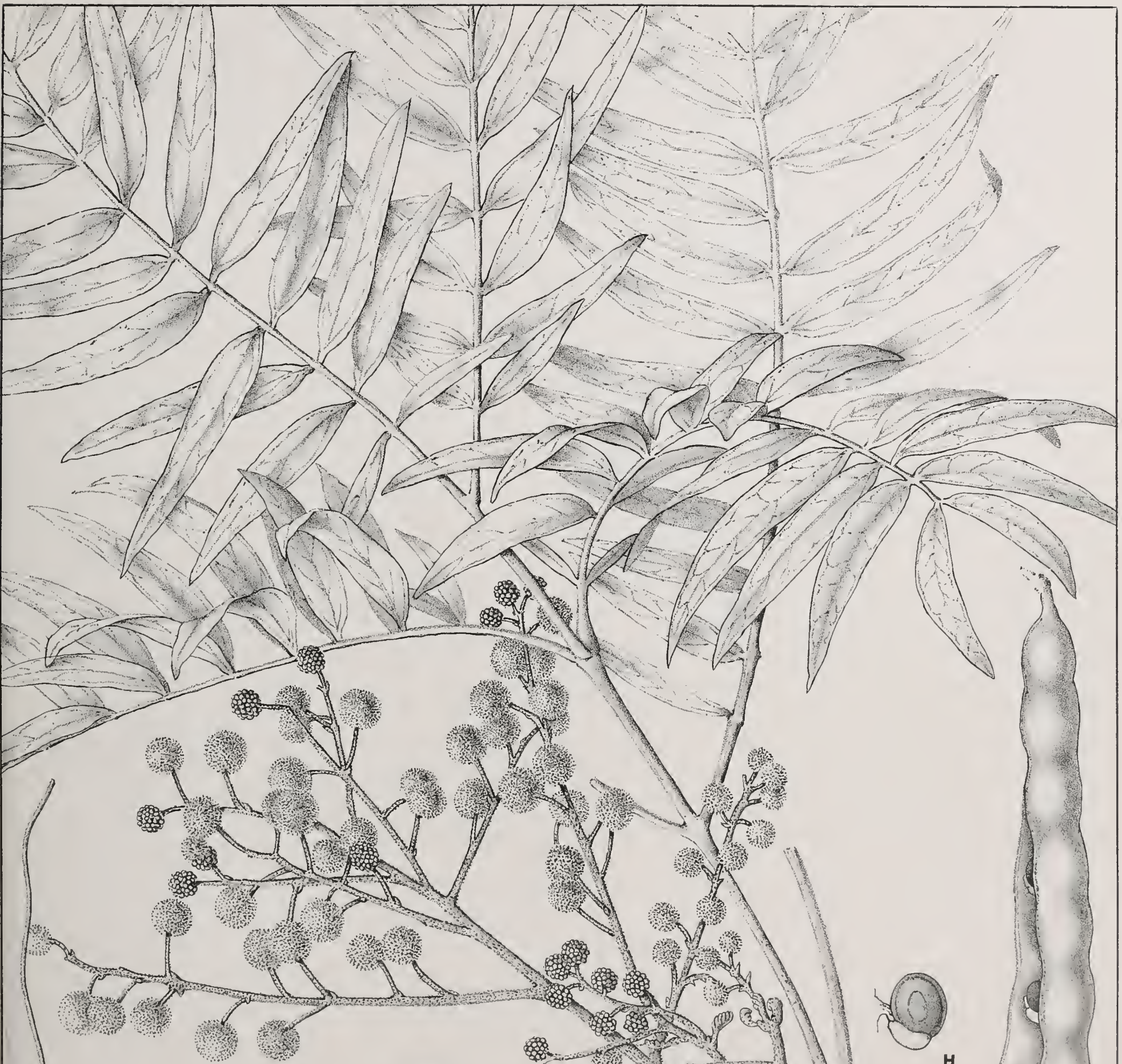
Timber.—The timber is pale coloured, and appears to be of very little merit. It is soft and perishable.

Bark.—It is occasionally used for tanning. A specimen of bark of this tree was analysed (*Proc. R.S. N.S.W.*, 1888, p. 271), and yielded 20·11 per cent. of tannic acid, and 36·2 per cent. of extract. Height, 50 feet; diameter, 8 inches. Flaky and somewhat rugged on the outside, but often blackish and stained with lichens, on account of its habitat (gullies). This sample reminds one of that of *A. decurrens* when young. This is a tree of local distribution, and were it more abundant it would come into notice as a tanner's bark, since the sample examined (obtained from Springwood, Blue Mountains) was hardly up to the average quality obtainable.

Two samples of this bark were received at the Technological Museum, May, 1890, from Kanimbla Valley, Blue Mountains—one from a large tree 30 to 50 feet high, diameter 15 inches, the other from a small tree.

The bark of the larger tree contained much scaly material on the outside, of a dark-brown colour, which, being deficient in tannic acid, detracts from the value of the bark. The thickness of this bark is 1 inch, half of which represents the inner bark, which is fibrous, very astringent, and of a light colour. Analysis of this bark (a fair section of outer and inner being taken) was made in June, 1890, and it was found to contain 28·5 per cent. of tannic acid, and 51·15 per cent. of extract. The liquor is of too dark a colour to be first-class, but would be improved by removing the outer scaly bark before grinding, if that were possible.

The bark from the younger tree was solid, slightly scaly on the outside, and ¼ inch in thickness. When powdered, it was hardly to be distinguished from some specimens of *decurrens* bark, being light-coloured, and altogether a promising bark. Analysis shows this to contain 31·1 per cent. of tannic acid, and 55·35 per cent. of extract.



THE CEDAR WATTLE.
(*Acacia elata*, A Cunn.)

A specimen from Robertson, stripped in January, yielded 28 per cent. of tannic acid, and 49·75 per cent. of extract. This also gave a light-coloured liquor. It is $\frac{1}{4}$ inch thick without the scaly exterior. The bark is pale-coloured, and worthy of some attention, although it is inclined to be fibrous.

Size.—It is a large tree for a wattle, but not the largest of the genus.

As an example, a correspondent of mine obtained fifteen 4-bushel sacks of bark from one tree. I measured a tree at Milson Island, Hawkesbury River, 3 feet in diameter at 3 feet from the ground, and 1 ft. 10 in. at 10 feet from the ground.

Its common size is, say, 20 or 30 feet high, with a stem diameter of, say, 9 inches.

Fungus.—Mr. D. McAlpine states that the fungus *Uromycladium* notabile (Ludw.) McAlp. is found on this tree.

Habitat.—Confined to New South Wales; found on the Blue Mountains and its spurs as far as Mounts Wilson and Tomah (chiefly in gullies and along water-courses), and in mountainous country no great distance south of Sydney—*e.g.*, West Bargo gullies, Picton, Mittagong, &c.

Propagation.—From seed. It is, however, not as a tan, not as a timber, that I recommend this wattle to notice. It is one of the shapeliest and most beautiful of the whole of the tree-wattles. Its dense, umbrageous, beautifully-disposed dark pinnate foliage never fails to command admiration. It requires a fair amount of winter cold, moisture, fairly good soil, and moderate shelter for its full development. It should find a place in every garden of moderate size. The great drawback of this and other wattles is, however, its liability to attacks by beetles and other wood-boring insects, and hence it cannot usually be depended on for more than five to ten years. It is a rapid grower, making surprising growth in a year or two.

EXPLANATION OF PLATE 84.

A. Flowering branch.
B. Bud.
C. Flower.
D. Expanded flower, opened out, showing—
  (*a*) Calyx.
  (*b*) Corolla.
  (*c*) Stamens.
  (*d*) Pistil.
E. Stamens.
F. Pistil.
G. Pod.
H. Seed.

(B–F greatly enlarged.)

Sydney: William Applegate Gullick, Government Printer.—1906.

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39.—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

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The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—The Mugga ; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.).

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No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

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No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

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No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
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No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
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(*Two Plates.*)

PART XX (ISSUED JULY, 1906).

(*Sixteen Plates.*)

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(*Two Plates.*)

No. 78.—THE BLACKBUTT OR PEPPERMINT (of New England) (*Eucalyptus Andrewsi*, Maiden).

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THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 3.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXIII OF THE COMPLETE WORK.

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXIII.

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*78995 A

No. 83.

Dysoxylon Fraseranum, Benth.

(Syn.: **D. Lessertianum,** Benth.).

The Rosewood.

(Family MELIACEÆ.)

Botanical description.—Genus, *Dysoxylon*, Blume.

Calyx.—Small, 4- or 5-toothed, or divided into 4 or 5 sepals.

Petals.—4 or 5, free or adnate to the staminal tube, spreading at the top.

Staminal tube.—Truncate or 8- or 10-toothed.

Anthers.—8 or 10, within the summit.

Disc.—Tubular, as long as or usually much longer than the ovary.

Ovary.—3- to 5-celled; style elongated.

Stigma.—Disc-like.

Ovules.—2 in each cell, or rarely solitary.

Capsule.—Globular or pear-shaped, 1- to 5-celled, opening loculicidally into 2 to 5 thickly coriaceous valves.

Seeds.—With or rarely without an arillus, oblong, with a broad ventral hilum.

Testa.—Coriaceous.

Albumen.—None.

Cotyledons.—Large. Trees, often fœtid.

Leaves.—Pinnate, leaflets opposite or alternate in the same species, entire, often oblique.

Panicles.—Axillary, loose, but often small.

Flowers.—Not very small.

Botanical description.—Species, *D. Fraseranum*, Benth., B.Fl. i, 381 (1863).

A tree of 80 to 130 feet, the young leaves and shoots slightly pubescent, glabrous when full-grown.

Leaflets 5 to 9, oblong-lanceolate or elliptical, acuminate, 3 to 6 in. long, narrowed and equal at the base, bearing occasionally tufts of hair in the axils of the principal veins underneath.

Panicles in the upper axils short, loose, divaricately branched, slightly pubescent.

Calyx cupular, about 1 line long, shortly and broadly 4-lobed.

Petals 4, about 3 lines long, nearly glabrous, adnate to the staminal tube to about half their length.

Staminal tube 8-toothed, glabrous outside.

Disc broadly tubular, rather longer than the ovary.

Ovary hirsute, 3-celled, with 2 ovules in each cell.

Fruit not seen.

Species, *D. Lessertianum*, Benth., B.Fl. i, 382 (1863).

Quite glabrous, or the young shoots and panicles minutely pubescent.

Leaflets.—4 to 10, usually without any terminal odd one, elliptical or lanceolate, shortly and obtusely acuminate, 4 to 5 inches long.

Panicles.—Loose, extra-axillary, 3 to 4 inches long.

Calyx.—Short, cupular, entire or irregularly crenulate.

Petals.—4 or 5, glabrous, more or less adherent to the staminal tube at their base, rarely at length free.

Staminal tube.—Glabrous, 8- or 10-toothed.

Tubular disc.—Broad, scarcely longer than the ovary.

Ovary.—Hirsute, 4- or 5-celled, with 1 ovule in each cell.

Fruit.—Hard, obovoid, about ½ inch long in the specimens seen.

Arillus of the seeds thin.

Bentham has a variety *pubescens* of *D. Lessertianum*, but this was later described as *D. Becklerianum*, C.DC., and will be dealt with in due course.

D. Fraseranum, Benth., **and D. Lessertianum**, Benth., **are identical!**

I think it is best, as a matter of convenience, to separately define the two species at this place, just as Bentham did, and then to explain how the confusion has arisen.

I have obtained specimens of Bentham's types of both *Fraseranum* and *Lessertianum*, and will, in Plate 93, Part XXV of this work, reproduce the original drawings of the type of *Hartighsea Fraserana*, A. de Juss. (*D. Fraseranum*, Benth.).

The differences between *D. Fraseranum* and *D. Lessertianum* are, according to Bentham:—

> "Flowers 4-merous. Ovary-cells 3, 2-ovulate. Leaflets 5 to 9. Panicles small, loose. Tubular disc short and broad."
>
> —*Fraseranum.*
>
> "Flowers 4- or 5-merous. Ovary—cells 4 or 5, 1-ovulate. Leaflets 4 to 6. Panicles loose, few-flowered. Staminal tube glabrous."
>
> —*Lessertianum.*

These supposed differences all appear to break down when a series of specimens is examined.

Casimir de Candolle in his *Meliaceæ* (Prodromus) places *D. Fraseranum* and *D. Lessertianum* next to each other in the section:—

> B. Tubus stamineus cum petalis plus minusve coalitus.
> 1° Paniculæ cum foliis hornotinæ.
> * Flores 5- meri.

To place all the evidence before my readers, I give M. de Candolle's descriptions of the supposed two species in parallel columns, and it will be seen that they really supplement each other in all important points.

Where the word ditto is given in the right-hand column, it signifies that the description in the right-hand column is identical with that in the left.

Fraseranum.	*Lessertianum.*
foliis longiuscule petiolatis,	*foliis* modice petiolatis,
abrupto pinnatis,	ditto
3 jugis;	2–4 jugis;
foliolis oppositis,	ditto
subsessilibus,	longiuscule petiolulatis,
oblongo-lanceolatis,	lanceolatis,
basi æquilonga cuneato-acutis,	basi æquali acutis,
apice obtusiuscule cuspidatis,	apice acute vel obtusiuscule cuspidatis,
utrinque glabris;	ditto
paniculis adpresse puberulis,	*paniculis* breviter pedunculatis ramosisque,
ramulosis, paucifloris;	glabris, ramis gracilibus,
	cymulis unifloris longiuscule pedicellatis;
floribus breviter pedicellatis;	*floribus* pedicellatis;
calyce cupuliformi,	*calyce* membranaceo,
extus adpresse puberulo,	sub-integro,
5-lobulato,	brevissime et acute 5-denticulato;
lobulis rotundatis;	
petalis glabris;	ditto
tubo cylindrico,	tubo sub-ovato-cylindrico,
utrinque parce pilosulo,	glabro,
acute dentato, dentibus integris;	10-laciniato, laciniis acute 2-denticulatis;
tubulo subcampanulato, crenulato,	*tubulo* cylindrico,
extus glabro,	extus puberulo,
intus parce retrorsum piloso;	intus retrorsum villoso,
	crenulato;
ovario dense villoso;	*ovario* adpresse villosulo;
stylo glabro;	
capsula subglobosa,	*capsula* globosa,
4-valvi, rubescente, glabra.	glabra, 4-5-6-valvi; 4-5-6-sperma.
Arbor 25–45 m. alta.	Arbor Aprili florescens,
	ligno odorem alliaceum referente;
Ramuli juniores adpresse puberuli dein glabri,	*ramulis* glabris,
fuscescenti-argillacei,	junioribus pallide et flavide argillaceis,
lenticellis rotundis inconspicuis conspersi.	dein fuscescentibus minute et pallide lenticelosis;
Folia ad 75 cent. longa;	
foliola firmulo-membranacea,	*foliola* circiter 7½ cent. longa, 33 mill. lata membranacea,
opaca, pellucido-punctulata (punctulis oblongis rotundisque);	pellucida;
superiora reliquis majora,	
10 cent. longa, 3½ cent. lata;	
nervis secundariis subtilibus subpatulis.	*nervis* secundariis suboppositis, subpatulis, subtilibus, utrinque, circiter 18,
Rhachis, cum petiolo 6 cent. longo teres leviter costulata,	Rhachis, cum petiolo 5 cent. longo teres,
puberula.	glabra.
Panicula folio multum brevior.	*Panicula* folium dimidium circiter æquans.
	Flores flavi.
Petala 6 mill. longa.	*Petala* 5, lineari-oblonga, acuta, 7 mill. longa.

Tubus stamineus ad medium usque cum petalis coalitus.	*Tubus stamineus* inferne cum petalis coalitus.
	Antheræ 10, ellipticæ, dorso paullo infra medium sessiles.
	Ovarii 5-locularis loculi 1-ovulati.
	Stylus glaber, cum stigmate discoideo tubum æquans.
Capsula 25 mill. longa.	*Capsulæ* vix 15 mill. crassæ, pericarpium tenue, dissepimentaque tenuissima.
	Semina obovata basi truncata callosaque; plumula antice et postice pilis hyalinis vestita.

The dates of publication of *Dysoxylon Fraseranum* and *Lessertianum* are precisely the same (1863), but since the former is described at B.Fl., i, 381, and the latter at p. 382, the former will take priority. In Part XXV, of this work (under Plate 93) I will deal with *D. Fraseranum* from other points of view, the object of the present note being the clearing up of the confusion between *D. Fraseranum* and *D. Lessertianum.*

Confusion of our Rosewood with *Synoum glandulosum.*

In the catalogue of Northern N.S.W. timbers, by C. Moore, sent to the London Exhibition of 1862, we have under "xlvii (erroneously printed xvii) *Synoum glandulosum*, 'Rosewood,' 'Mocondie' of the aborigines, open forest brushes on the Clarence and Richmond." The rest of the label is given under "Timber." "*Synoum glandulosum*" is an error; the Rosewood flowers a good deal resemble those of *S. glandulosum* at first sight.

I have the original label of No. 47 (? in Beckler's handwriting), which reads:—

> 47. Rosewood. A magnificent tree. Wood reddish, scented like a rose, and much used for furniture purposes. General in the Clarence and Richmond districts.

This label was endorsed by Mueller, "*D. Lessertianum*, Benth."

Synoum glandulosum is, when large enough, called "Rosewood" to this day; but it is not *the* Rosewood of New South Wales, and the explanation I give above explains how a possibly misleading name has got into many books.

Botanical Name.—*Dysoxylon*, from two Greek words, *dysodes* or *dysosmos*, fœtid or ill-smelling, and *xylon*, wood, in allusion to the bad smell (usually of a garlic character) of some species. This odour is strongest in some non-Australian timbers. In the species under notice, the odour of the timber is the reverse of ill-smelling. *Fraseranum*, in honour of Charles Fraser, first Superintendent of the Botanic Gardens, Sydney, who early collected the plant.

Lessertianum, in honour of Benjamin Delessert, a distinguished French botanist, who was born at Lyons in 1773, and who died at Paris in 1847. He was the author of an excellent work, "Icones selectæ plantarum." His fine herbarium was acquired by the city of Geneva, and still bears the name "Herbier Delessert."

Vernacular Name.—"Rosewood," because of the odour of the freshly-cut timber. It retains this sweet perfume for an indefinite period.

Aboriginal Name.—"Mocondie" of the aborigines of the Clarence and Richmond.

Synonym.—*Hartighsea Lesserliana*, A. De Juss. I give the original description, taken from a work difficult of access in Australia. (I will give the original description of *H. Fraserana* in Part XXV).

> H. Foliolis 4–6 alternis vel oppositis, lanceolato-ellipticis, brevissimè et obtusè accuminatis; paniculis laxè paucifloris; petalis 5 cum tubo stamineo infernè coalitis; ovario 4-loculari.
>
> *Rami* teretes, glabri, novelli (sicut et petioli) virescentes.
>
> *Folia* pinnata, foliolis 4–6 alternis aut per juga oppositis, poll. 3 longis et 1½ latis, lanceolato-ellipticis, brevissimè et obtusè acuminatis, glaberrimis, petiolulatis petiolulo semi-pollicari: petioli poll. 4–5 longi, glaberrimi, sub foliorum insertione canaliculati.
>
> *Paniculæ* extra-axillares, pol. 3 longæ; pedunculi versus apicem tantùm et laxè floriferi, graciles, partiales, bracteati; pedicelli discolores, 1–1½ longi.
>
> *Calyx* brevis, cupulæformis, subinteger aut irregulariter crenulatus, glaber.
>
> *Petala* 5 glabra, in alabastro crassa et arctè interse coalita.
>
> *Tubus stamineus* cylindricus, 10 dentatus dentibus interdùm bidentulatis, glaberrimus.
>
> *Tubulus* ovario longior, cylindricus, crenulatus, extrorsùm glaber, introrsùm hispidulus, ciliatus.
>
> *Stylus* tubum paululùm superans, glaberrimus.
>
> *Stigma* summo stylo incrassato impositum.
>
> *Ovarium* conicum, hispidulum, 4 loculare, loculis 1-ovulatis: ovula ex angulo interno infra apicem suspensa. *Fructus* . . . .
>
> Hab. in Nova Hollandiâ (v.s.s. in herb. Ventenat Mus. Lessert).—(A. Jussieu in *Mém. Mus. Paris*, xix, 264, 1821).

Leaves.—Dark, and rather shining on the upper side, paler underneath, leaflets 5–10, average length 2¾–3 inches (W. Dunn, referring to living trees on the Macpherson Range).

Flowers.—Mr. Dunn states it flowers in the late autumn; later than Red Cedar. The flowers have a very agreeable smell.

Fruit.—"Of a pretty rosy red" when quite ripe.

Bark.—Often rather scaly; somewhat like Red Cedar.

Timber.—Following is the earliest description of the timber I can find:—

> Timber, when fresh, of a deep red colour, emitting a scent similar to the common rose. Used for cabinet purposes, for which it has long been highly valued, as well as for the inside lining of houses and shipbuilding.—(C. Moore, No. xlvii, in Cat. N.S.W. Exhibits, London Exhibition, 1862.)

Characteristics.—Of a reddish colour, and has a neat figure. Has a fragrant rose-odour. A timber of the mahogany class. Works splendidly, shrinks little, and is of good appearance.

Speaking of a Queensland specimen sent to the Colonial and Indian Exhibition, Mr. Allen Ransome says:—

> This wood is of a reddish colour, with a good figure. It worked excellently in the machines, and planes especially well. If it can be imported at a reasonable price it might take the place of mahogany.

A specimen from the Myall Lakes, New South Wales, strongly resembles mahogany; but it has little figure. It is straight and close in the grain, and a good working timber.

This wood reminds one of Cedar, but it is a little heavier, is of rather a deader colour, and it is apt to tear a little under the plane, hence it fetches only about half the price of Cedar in Sydney. But it polishes well, and has a sheen which is very pretty. Two slabs in the Technological Museum, which have been seasoned over twenty-five years (having been exhibited at the London International Exhibition of 1862), have weights which correspond to 41 lb. 5 oz. and 44 lb. 15 oz. per cubic foot respectively.

Young Rosewood has hardly any colour, but the perfume is sweet. Under the axe it is a fairly hard timber. Straight in grain, heavy, and beautifully coloured red in centre, the thin sap-wood being pale yellow; the bark is slightly rough.

Mr. Yabsley, of the Coraki saw-mills, says that Rosewood will stand the weather almost as well as any of the best hardwoods, and can be split.

As evidence of *durability*, some large logs of timber, moss-grown, yet still sound, well-coloured, and emitting the usual fragrance when cut into, can be seen in some of our brush forests, with large trees growing all around them, and which have evidently come to maturity since the trees fell, probably before the British settlement of Australia. Settlers often use Rosewood for house-blocks; they know its durability in this trying situation. It resists both damp and white ants.

Principal uses.—Furniture, cabinet-work, turnery, carving, and indoor work of all kinds. It is used for newels, mouldings, and framing of all sorts. Useful for show-case work, also for planes, levers, trundles, and studs in roller-boards of organs, &c., window-jambs, screws of hand-screws, and any uses where a wood a little harder than softwood is required. Recent test uses are for bee-boxes, broom-handles, and wire-mattress frames. Has been strongly recommended for wine-casks. It will split, and I am assured it imparts no taste to wine.

For boards for ball-room floors it is excellent; I prefer it to Tallow-wood.—(W. Dunn.)

Mr. Yabsley states that Rosewood can be put to more uses than any timber we have in New South Wales, so far as he knows.

I desire now to draw attention to a timber for wine-casks which I had not thought of for the purpose, until the late Mr. Thomas Bawden, of Grafton, brought it under my notice in 1891. His remarks on such a subject demand respect, for, as is well known, he gave a good deal of attention to the utilisation of our native products during thirty years and more. Mr. Bawden says:—

> With regard to wine-casks, and the proper wood for the purpose, I think you will find Rosewood the very best. I know some years ago the late Richard Bligh had some large vats and casks made of that timber, which suited admirably, and certainly gave no taste to the wine. I yesterday asked an old wine-grower of large experience what he thought best for wine vats or casks, and he at once selected Rosewood, as giving no taste of a deleterious character to the wine. He has tried Silky Oak, but has condemned it, and has not been able to get anything better than Rosewood.

I replied expressing doubt lest an odorous wood, of the nature of Rosewood, would affect the bouquet of wines stored in it. In reply, Mr. Bawden wrote:—

> With regard to the Rosewood for casks, I have the assurance, in addition to my own large experience, of one who has been engaged in wine-making in this district for the past thirty years, that the wood does not give any taste to the wine. Might I suggest an experiment of a small piece of seasoned Rosewood placed in a bottle of wine for a few months? Should the Rosewood turn out as I believe it will, there are large quantities of it in this district.

I venture to express the hope that those who have tried Rosewood for wine-casks will relate their experience, and that those will test it who have facilities for so doing and have not yet done so. It is high time that such an important matter was settled. I should also like to see exhaustive tests made of the Red Bean (*D. Muelleri*), which may be described as a scentless Rosewood. Who will take the matter up?

Drawbacks to the Timber.

1. *Its oily nature.*—A drawback to this undoubtedly valuable timber is the circumstance that it takes glue with difficulty, owing, perhaps, to some oleaginous substance in it.

It is unsuitable for instrument cases. The following report sent in to the Public Works Department explains the matter:—

> A 5-inch theodolite was sent in for repairs, supply of some parts, and new case, from Lands Department. New case was made of well-seasoned Colonial Rosewood by Government Architect's Workshop, the new parts of the instrument were bronzed and lacquered in the usual way, the other portion of the instrument merely cleaned, and delivered to Lands Department on 8/2/05. After about three months the *whole* of the instrument was observed to be sticky, and was subsequently returned to be cleaned off, rebronzed and relacquered, which was done accordingly, and returned to Lands Department on 5/7/05. Then again, it was reported to be sticky on the 28/8/05, becoming similar to what it was before. A small box was made of a piece of the same wood, and a piece of brass tube bronzed and lacquered was placed in it on 30/8/05, and after about three months it was found to be quite sticky.
>
> A similar thing has happened to another 5-inch theodolite, for which a new case was made of Colonial Rosewood for the Public Works Department on 15/3/05, and after lying in store was noticed to be the same on 1/5/06 (original lacquer affected).
>
> Also on a parallel ruler that was placed in a Colonial Rosewood case.

Rosewood belongs to a group of plants called the Meliaceæ, certain of which contain an essential oil (in which is dissolved a resin) in their timber. At the ordinary temperature of the air, and more readily on the application of heat, this solution of resin in oil evaporates and the resin is condensed on any cool surface, preferably on metal or other conductor of heat.

King George III had a valuable watch which caused his watchmaker a good deal of trouble, when it was found that His Majesty often put it in a drawer made of odoriferous wood, the resin contained in which clogged the works.

The subject is worthy of exhaustive investigation which, so far as I am aware, it has not yet received. Meantime, so far as Rosewood is concerned, instruments should be kept in Red Cedar boxes.

2. *Its alleged special tendency to shakiness.*—Mr. Robert Kaleski, who formerly resided on the Dorrigo, wrote to me four or five years ago :—

> Rosewood grows about 120 to 160 feet, about 12 feet girth, sometimes round in barrel, sometimes very spurry; clean barrel like rest of scrub timbers. Faultiest tree for the mill in N.S.W., apparently sound trees shaking and splitting when broken down on the bench. Will not take glue, and will last for posts and blocks about eight years in the ground. Never loses scent; goes for same soil as Cedar. Mature trees nearly always rotten inside, often only a shell; sort of white ant responsible for this; goes in at the bottom of spurs and works upwards. Generally grows in clumps like Cedar. Belt runs from W. to N.E.; large quantity at N.E. at Paddy's Plain. Is at present being cut for Germany for the mills. Very pretty figuring, woolly to work, grain too short for building stuff. Fairly durable in weather; fair amount available. Has red seed (fruit, J. H. M.) something like a small cherry.
>
> Out of 100,000 feet standing, which I bought on speculation, I could only find 30,000 to fall, and 40 per cent. of that proved to be faulty when down, some apparently sound trees splitting in halves, when hitting the ground, from end to end. Its drawing weight is 300 feet to a ton. Very liable to develop shakes after being sawn a few weeks. Tree always unsound if dead branches on top. My own selection contained more Rosewood than any one I know of on the Dorrigo.

This is an exact copy. In 1893 I wrote, after a careful inspection of the Dorrigo :—

> Rosewood.—A fine tree 5 feet 6 inches in diameter and 140 feet to the first branch was seen, but although the northern portion of the Dorrigo is full of Rosewood (merchantable), say 4 feet in diameter, it does not attain the same magnificent dimensions that it does in parts of the coast districts.

Nearly all our brush timbers lack tensile strength, and, particularly when they attain a large size, they require careful felling, otherwise the logs may be injured. In Europe, the injury to timber in falling is very carefully guarded against, but here special precautions to break the fall of a large tree, *e.g.*, by dropping it on smaller worthless timber, is very rarely thought of. Cedar is often shaken by careless felling. I have already stated that the Rosewood trees of the Dorrigo are not so fine as those of the coast belt, and if the large percentage of over-mature trees on the Dorrigo be as stated by Mr. Kaleski, then the sooner, in any rational system of forestry, they are cut out to make room for young growth the better. Over-mature trees only cumber the ground, and are a hindrance and a perplexity to the forester.

In view of Mr. Kaleski's very strong language, "Faultiest tree for the mill in N.S.W.," the following passage from the report of Mr. Boorman, Collector, Botanic Gardens, to me, is interesting. He wrote me from the Macpherson Range, and has never seen Mr. Kaleski's report :—

> This (Rosewood) is a very large tree, of immense timber-producing qualities, as, in addition to size, it is perfectly sound throughout.

I want to get at the truth in regard to our timbers. I always state their alleged defects when I know them, for we must be as careful in stating defects as in attributing excellencies.

Size.—

> One of the largest trees in the district in which it is found, varying in height from 70 to 100 feet, and from 4 to 5 feet in diameter.—(C. Moore, *loc. cit.*)
>
> Tall and massive trees of 100–140 feet, 20 to 30 feet at base. Acacia Creek, Macpherson Range, N.S.W.—(W. Dunn and J. L. Boorman.)

Following is another report from Mr. Boorman to me:—

> It reaches the height of 80–140 feet, whilst its girth measurements are anything between 20–40 feet.

Here is another report from Mr. Dunn:—

> You are aware the tree grows large in circumference, although not so extra tall. Yesterday I put a measuring tape around twelve of these standing trees. The largest gave a girth of 18½ feet, and the smallest 12 feet; the twelve averaged 16 feet in circumference, measured 5 feet from the ground. To reckon each tree to carry a barrel 50 feet in length, with a mean or average girth of 16 feet, works out a return of 115,200 super. feet; this, at 12d. per 100 feet super. (the present royalty rates here on all brush timber other than Pine [Hoop]), amounts to £57 12s. royalty.

It will thus be seen that the Rosewood is one of the giants amongst New South Wales forest trees.

Habitat.—This is a "brush" or jungle timber found in northern New South Wales from Wyong (a little north of the Hawkesbury) to southern Queensland.

It was collected by Robert Brown on the Williams River, and, far later, by Wilcox and Beckler on the Clarence River.

> It is plentiful on the ranges at the head of the Richmond.—(A. H. Yabsley, Coraki.)
>
> There is an abundant supply of Rosewood on the Clarence River water-shed of the Macpherson Range, and the Tooloon and other brushes.—(W. Dunn.)

It seems almost superfluous to give a list of localities.

Following is a list of the N.S.W. Forest Reserves containing Rosewood (February, 1905):—

County.	No. of Forest Reserve.	Area. acres.
Buller	32,130	21,512
,,	35,944	12,310
,,	37,004	36,800
,,	38,397	8,500
Drake	6,264	9,000
,,	11,111	900
Dudley	37,568	89,900
Durham	196	10,000
,,	201	22,440
,,	202	34,465
Fitzroy	354	4,800
,,	355	5,760
,,	642	20,778
,,	19,418	1,098
,,	20,667	3,380
Gresham	1,608	24,960
,,	36,928	16,500
Hawes	7,974	1,280
Rous	61	960
,,	62	1,820
,,	256	94
,,	4,353	64,331

Quantity available.—Practically unlimited. I look upon this as a valuable reserve timber. Its usefulness will be realised later on, when Cedar is even scarcer than it is.

Speaking of the Macpherson Range, Mr. Boorman reports :—

This is perhaps more common than any other species of softwood, save "Pine," forming huge trees, straight in barrel, producing an enormous amount of good timber, the supply being almost unlimited.

The following statement was published in the Press in January, 1905, under the authority of the Minister for Lands :—

SUPPLY OF ROSEWOOD IN NEW SOUTH WALES.

The Minister for Lands having observed that the Commercial Agent in London had been informed that it would take New South Wales twelve months to supply an order for 200,000 feet of Rosewood, Red and Black Bean mixed, and having regard to the fact that the supply of Rosewood—a timber eminently suitable for furniture work—is stated in Maiden's "Commercial Timbers of New South Wales" to be "practically unlimited," the Minister has caused inquiry to be made, with the result that one saw-miller in the Bellingen district has intimated that he will undertake to supply 30,000 feet of Rosewood a month, while another offers to supply 250,000 feet of this timber per annum. One forest officer in the northern district says an order for 200,000 feet of Rosewood could be executed in his district in a very short time; and yet another one reports that in three places alone in his district there are about 15,000,000 feet available.

The Minister has directed that this information shall be at once conveyed to the Commercial Agent.

The following extracts from a report are interesting :—

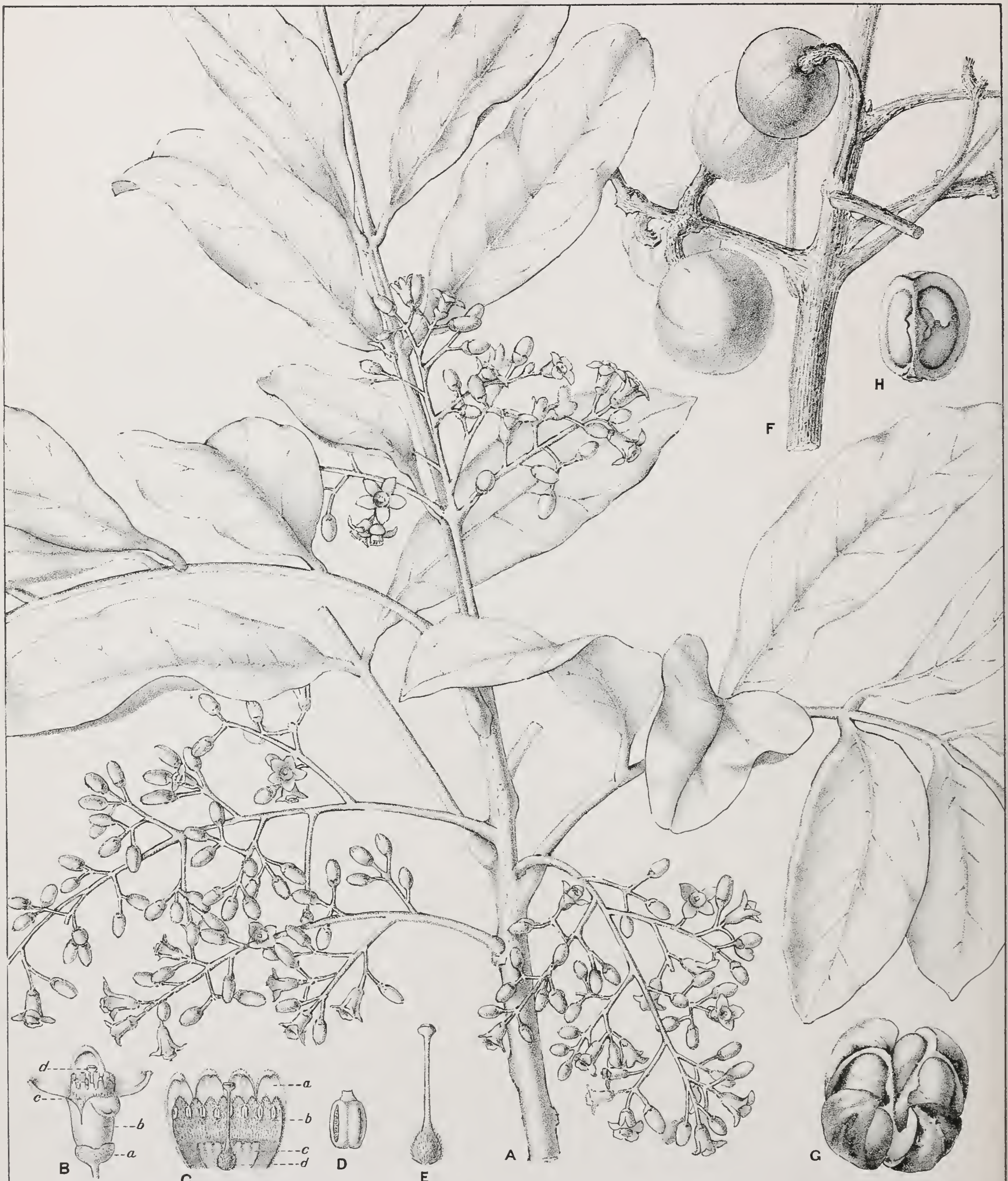
> "Referring to your circular letter dated 26th November, 1904, asking to be furnished with a report on the statement made to the Commercial Agent in London that it would take twelve months to supply an order of 200,000 feet of Rosewood, Black Bean, &c., I have the honor to report that the statement is not correct, as on Forest Reserve No. 32,130, County of Buller, there is an area of 4 miles by 3 densely covered with the best kinds of Rosewood, containing at the very lowest estimate 3,000,000 superficial feet of matured timber.
>
> "In the Parishes of Gore, Acacia, and Koreela, County of Buller, there is an estimated quantity of matured Rosewood of 9,000,000 superficial feet, and in the Parish of Beaury, County of Buller, 3,500,000 superficial feet, to say nothing of numbers of other parishes all along the Eastern Fall that contain quantities of this timber.
>
> "I forward an offer from the manager of the Federal Saw-mill Co., of New South Wales, to deliver, f.o.b. at Brisbane, 250,000 feet per annum, and if any inducement were offered, two further mills could be erected and each supply the same annual output near the Queensland border at a railway station named Dugandan in Queensland.
>
> "In addition to Rosewood, I estimate that 20,000,000 feet of the following matured timbers could be supplied for export purpose at the Queensland border, viz. :—Silky Oak, Tulipwood, Red and Black Bean, Native Guava, White Cherry, Bonewood, Onionwood, Maiden's Blush, Tamarind, Cudgerie, Teak, Yellow-wood, Stavewood, Coachwood, &c., to say nothing of Cedar and Hoop Pine.
>
> "It only requires some inducement to open up an enormous trade with the world in these excessively valuable timbers, which would find enormous employment and revenue to the State."

The following letter is written by a well-known timber expert :—

I have pleasure in assuring you that the supply of this particular ornamental and valuable timber (Rosewood) is practically unlimited, extending over almost all the high land in the Eastern Division of this State, and I have little doubt that when its undoubted value becomes known abroad, Rosewood will be found to be one of the largest exported of softwoods from New South Wales. At present the price given for Rosewood is too low to pay teamsters to haul it; but I can assure you there is a plentiful supply to be got, and no doubt the price will be given later on, when it has proved its great value abroad.

Following is the opinion of a Forest Officer :—

All that is required to find custom for this lovely wood, is to dispatch a million or so of superficial feet of thoroughly matured timber to London or Germany; no other introduction is required. Its fame will soon be established for all time, and the Coast saw-mills will be kept in motion cutting Rosewood day



ROSEWOOD.

(*Dysoxylon Fraseranum*, Benth. = *D. Lessertianum*, Benth.)

and night for years to come. I sincerely trust no allied species will be exported; if so, our trade may get disturbed, and the genuine material imperilled. The virtues of Rosewood cannot be overrated; and no one knows this better than yourself.

Again:—

> There is a tremendous future for this wood, and it is worthy of careful nursing and protection, more especially as Red Cedar is now nearly extinct (in New South Wales). Rosewood alone is a most valuable asset to the State, and I would go so far in championing its claims as to suggest special legislation for its protection, *i.e.*, have special Forest Reserves set apart for it where abundant,—treat it and guard it as if it were one of the precious metals.

Surely something is economically wrong when we have a timber like this, admittedly possessing properties which render it valuable, which has to be destroyed because cut-throat competition prevents timber-haulers and sawyers getting a living wage for hauling and cutting it.

Responsible buyers of New South Wales timbers in other countries have told me, in practically these words: "You New South Wales people are a pack of fools to give away your timber for the price you do; your timber merchants are using its plentifulness for the purpose of cutting one another out in foreign markets."

This is strong language, and it is for students of political economy to suggest a remedy. Certainly the timber-fellers and haulers, and the owners of country mills, do not reap much advantage from many kinds of colonial timber.

EXPLANATION OF PLATE 85.

A. Flowering branch.
B. Flower, showing—
    (*a*) Calyx.
    (*b*) Corolla.
    (*c*) Staminal tube.
    (*d*) Stigma.
C. Flower opened out, showing—
    (*a*) Corolla.
    (*b*) Staminal tube (8 to 10 toothed).
    (*c*) Tubular disc.
    (*d*) Pistil.
D. Anther.
E. Pistil.
F. Fruits.
G. Ripe capsule, showing four deep-orange coloured seeds.
H. Part of capsule showing seed with arillus and manner of attachment.

No. 84.

Eucalyptus vitrea, R. T. Baker.

The White-top Messmate.

(Natural Order MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus* (see Part II, p. 33).

Botanical description.—Species, *E. vitrea,* R. T. Baker in *Proc. Linn. Soc. N.S.W.*, 1900, p. 303.

A tall tree with a roughish bark, similar to *E. amygdalina,* Labill., the extremities of the branches being smooth.

Sucker leaves.—Alternate or opposite, with a short petiole or sessile, ovate-lanceolate, acuminate lateral veins diverging from below the middle of the midrib, prominent on both sides, intramarginal vein removed from the edge, not shining; under 6 inches long, 1½ inches broad.

Mature leaves.—Narrow lanceolate, about 6 inches long, and 6 to 9 lines wide, petiole short; *shining on both sides,* a dull green when fresh, but drying a light slate colour; lateral veins few and almost parallel to the midrib, two generally commencing at the base of the midrib and running the whole length of the leaf almost parallel to the midrib. Oil glands very numerous.

Peduncles.—Axillary, short, 2–3 lines, bearing generally from 5–8 flowers.

Buds.—From 2½ to 4 lines long, operculum hemispherical, shortly acuminate.

Ovary.—Flat-topped.

Anthers.—Kidney-shaped, connective prominent.

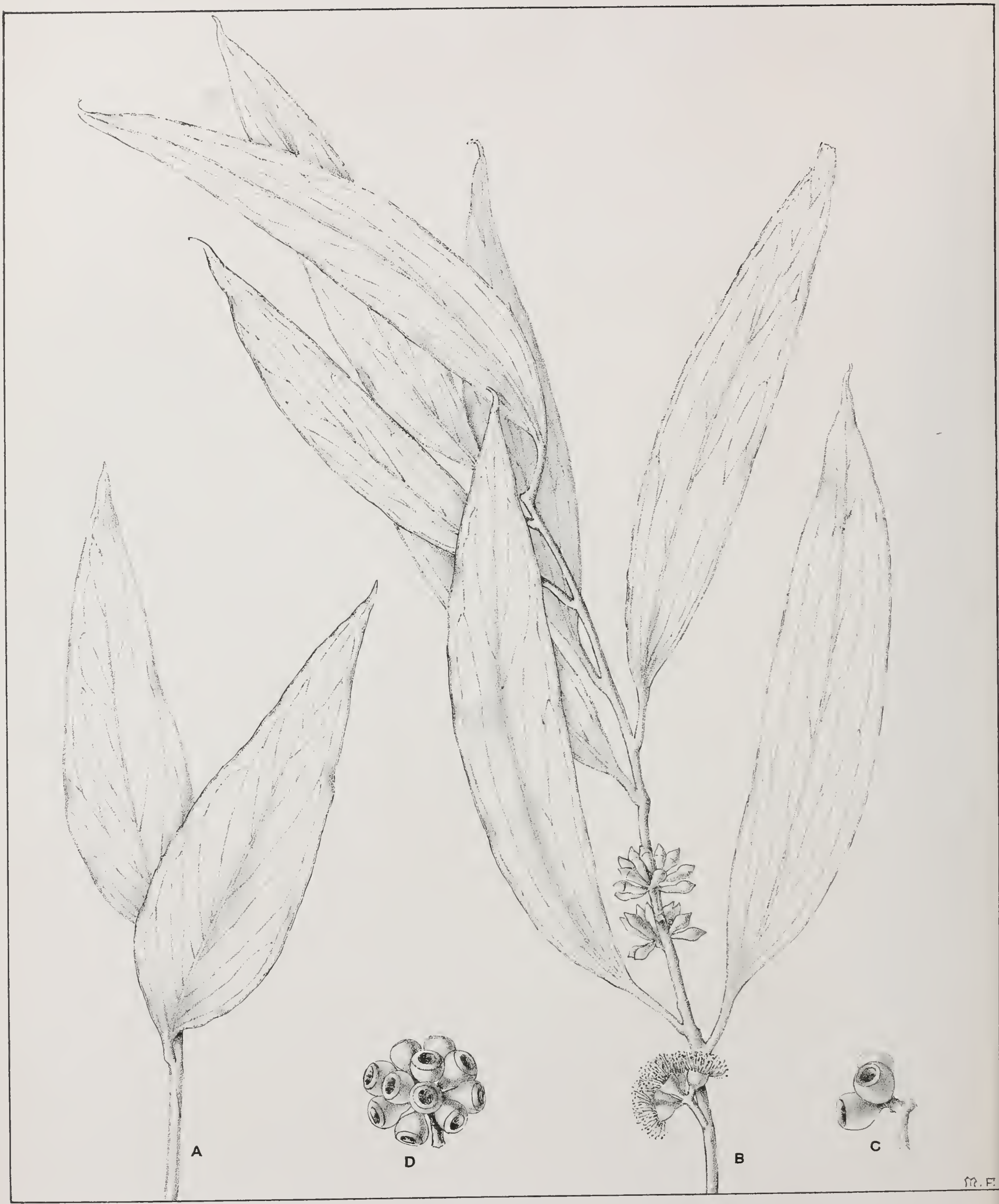
Fruit.—Hemispherical, about 3 lines in diameter, rim thick, red, slightly convex, shining, pedicel about 1 line long.

Botanical Name.—*Eucalyptus,* already explained, Part II, p. 34; *vitrea,* Latin, shiny, glassy, vitreous, in allusion to the appearance of the leaves.

Vernacular Names.—"White-top Messmate," in allusion to the smooth branches and the fibrous butt, reminding bushmen of Messmate (*E. obliqua*).

It is also one of the trees called "Silver-top," from the glinting of the shiny leaves in the sunlight, which causes them to appear silvery.

Synonyms.—*E. vitellina,* Naudin, a form first described from specimens grown in France (see *Proc. Linn. Soc., N.S.W.*, 1903, p. 900), and *E. vitrea,* R. T. Baker, are, in my opinion, closely related (perhaps identical) hybrids between *E. amygdalina* and *E. coriacea.* Naudin looked upon his species as a hybrid (and even suggested the above two parents). I have dealt with this form, and also the evidence for looking upon *E. vitrea* as a hybrid, in my "Critical Revision of the Genus Eucalyptus" (Part VI, pp. 164–166). In this work additional illustrations of leaves, fruit, &c., are to be found.



WHITE-TOP MESSMATE.
(*Eucalyptus vitrea*, R. T. Baker.)

Leaves.—Messrs. Baker and Smith, "Research on the Eucalypts," report:—

Species.	Whence collected for oil.	Specific Gravity at 15° C.	Specific Rotation. [α] D.	Saponification Number.	Solubility in Alcohol.	Constituents found.
E. vitrea ...	Crookwell, N.S.W.	0·886	— 33·92°	5·4	1 vol. 80 %.	Phellandrene, eucalyptol, peppermint ketone.

Timber.—A moderately hard, close-grained timber, full of shakes and gum veins, and apparently of little economic value. It possesses few of the good qualities of *E amygdalina*, Labill., which is fissile, soft, and easily worked.

Size.—A medium-sized forest tree.

Habitat.—Apparently commonest in New South Wales, but also found in Victoria and South Australia. I expect to find it in Tasmania. It is a species which requires further investigation, as it is rather unstable.

VICTORIA.

Hills near Mansfield (Strathbogie).

SOUTH AUSTRALIA.

"Shrub about 4 feet high, bark ash grey. In Stringybark Forest, 15 miles N.W. of Mt. Gambier, S.A." (Collector?).

The venation is not quite so straight as the type originally figured by Mr. Baker, but it appears to be closer to *E. vitrea* than to any other species. I have some specimens of *E. vitrea* from the locality whence the type was gathered with even more spreading veins than this particular specimen.

NEW SOUTH WALES.

As regards this State, it is apparently confined to the southern mountain ranges and spurs of the Blue Mountains. Specific localities are Crookwell, Bungendore, Marulan, Wingello, Sutton Forest (Moss Vale), Bullio to Wombeyan (18 miles from the latter place), Hampton–Oberon Road (near Jenolan Caves).

Departures from the type which one expects to find in a hybrid are:—

(*a*) Jenolan Caves, with very narrow leaves.
(*b*) Delegate. Broad leaves.
(*c*) Berrima, with a preponderance of *E. coriacea* blood.

EXPLANATION OF PLATE 86.

A. Leaves nearly in the sucker (opposite) stage.
B. Flowering branch.
C. Fruits. All drawn from the type.
D. Fruits from Bungendore, N.S.W.

No. 85.

Acacia decurrens, Willd.

AND ITS VARIETIES.

(Family LEGUMINOSÆ: MIMOSÆ.)

The Acacia Decurrens Group of Wattles.

Black, Green, and Silver Wattles.

The well-known feathery-leaved wattle, familiar to most people in the eastern and southern States—by whom it is chiefly known by one of two names, viz., Black or Green Wattle—was first botanically described by the botanist Willdenow, who defined two species, *Acacia decurrens* and *Acacia mollissima.*

In the "Flora Australiensis," Bentham took Willdenow's *decurrens* as the typical species, reducing the other species to the rank of a variety under the name of *mollis*; in other words, *Acacia mollissima*, Willd., is *Acacia decurrens*, Willd., var. *mollis*, Benth. Bentham also called a certain form variety *normalis*, a third one *pauciglandulosa*, and a fourth (doubtfully) *Leichhardtii.*

In Mueller's "Dichotomous Key to Victorian Plants," he looked upon *decurrens* and *mollissima* as distinct species.

I go further than Bentham, and reduce *A. dealbata*, Link, to a variety of *decurrens.* I will produce evidence for this step presently.

These four varieties appear at first sight to be more or less well defined; but, after examination of some hundreds of specimens, I have formed the opinion that they all pass into one another, and the *mollis* variety (in my view) has no more claim to specific rank than has *pauciglandulosa.*

In stating this I am but endorsing Bentham's words:—

> The following forms appear at first sight very distinct, but pass into each other by many gradations.

Following are the points, stated briefly, on which I base my opinion:—

1st. The pinnules of all vary more or less in each variety in length, breadth, and insertion.
2nd. A decurrence of leaf-stalks is common to all.
3rd. Nothing is constant in times of flowering.
4th. The indumentum is variable.
5th. Seed: the microscope fails to detect any marked difference.
6th. The number of glands vary in each variety in the same tree.

We will now discuss the several varieties:—

(*a*) The typical form. The var. *normalis* of Bentham.
(*b*) Var. *mollis*, Lindl. (*A. mollissima*, Willd.).
(*c*) Var. *pauciglandulosa*, F.v.M.
(*d*) Var. *Leichhardtii*, Benth. (*A. Arundelliana*, Bailey).
(*e*) Var. *dealbata*, F.v.M. (*A. dealbata*, Link.).
(*f*) Var. *lanigera*, Maiden.

The number of varieties of *A. decurrens* is very great. I have just given the names of six forms, and under some of the varieties I will give abundant evidence of their instability. Mr. R. T. Baker has named a variety *Deanei*,* but I cannot find that it differs from var. *mollis* in any important character; while two forms from the Dorrigo district, that I named provisionally years ago,† are too close to variety *pauciglandulosa* to be usefully separated from it. They are:—

> *Acacia decurrens*, Willd., var. A.—Guy Fawkes to Wollomombi.—Found on the summit of the Round Mountain. A variety new to me, and intermediate between *mollis* and *Leichhardtii*. It is remarkable for the excessive fineness and shortness of the pinnules, in which it approaches *pauciglandulosa*. It is hardly so soft as *mollis*, but has the yellow tinge to the young shoots so often seen in that variety. It is, however, chiefly to be noted because of the glands. They are small, urceolate, and unusually symmetrical in proportion. I have not hitherto noticed similar glands on any form of *Acacia decurrens*.
>
> *Acacia decurrens*, Willd., var. B.—This wattle was first seen about Bostobrick, and thence to Tyringham. It is less pubescent than *mollis*, and has the beautiful golden-yellow tips of that variety. Branchlets less prominently winged than those of the variety *normalis*, but not less than any of the other varieties. Pinnæ, fifteen to twenty pairs, and more. Leaflets (pinnules), thirty to fifty, as far as seen. More distant and longer than those of *mollis*. Obtuse, and as long as those of some forms of *normalis*.
>
> *Glands*.—One (a prominent) gland at the base of the lowest pair of pinnules. There appear to be no glands on the main rhachis, except a few towards the tip. A striking feature of this variety is the great length and rigidity (erect or "strict" growth) of the general or primary rhachis. The position of this variety appears to be between *normalis* and *mollis*. I have given no distinctive names to these two varieties, as I am disinclined to add to the already cumbersome list of varieties. I find more and more evidence of the infinite variation of this species (*Acacia decurrens*).

Mr. C. T. Musson‡ writes:—

> Another colour peculiarity is found in a bright yellow or orange strip crossing the angle formed by the branches in *Acacia decurrens*. Here is the spot mostly attacked by borers. Is there toughening tissue present?

Many of my readers have observed this coloration in *A. decurrens*. Its function is not obvious, and I draw attention to it since it is one of the innumerable morphological indications which we are not yet able to interpret, and the key to the physiology of such marking may be found by the observant bush-naturalist. It may appear to be a little thing; but the science of botany is built up by "little" observations, often by untrained men.

An interesting study is W. W. Froggatt's "Insects of the Wattle-trees."§ Unfortunately our wattles are very liable to insect pests, but this causes them to be of special interest to entomologists.

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* *Proc. Linn. Soc. N.S.W.*, xxi, 348 (1896).

† *Agric. Gazette, N.S.W.*, 1894, p. 607.

‡ *Hawkesbury Agric. Coll. Journal*, 20th August, 1904, p. 3.

§ *Agric. Gazette*, July, 1902, p. 701.

A. decurrens yields an important tan-bark in most of the States, and every encouragement should be given to its cultivation. This wattle and the South Australian *A. pycnantha* will supplement each other, the former flourishing in situations too damp and cold for the latter. Varieties of *A. decurrens* are at present abundant on some Crown and other lands in various districts of the State, where thousands, and perhaps millions, of seedlings may be sometimes seen, forming a dense, useless brush, liable to destruction by bush fires. In these localities we do not require to sow seed, but to use the tomahawk. They should be thinned out freely, to admit light and air to the most promising seedlings, which will then have some chance of forming trees capable of carrying a merchantable amount of bark. In many places selectors wage war against this tree, simply looking upon it as a troublesome weed. They should try the thinning process, leaving the most shapely trees. They will find that wattle scrub (of the right kinds) will become of value, instead of a nuisance.

Mr. J. E. Brown stated that, in South Australia, this species is much less hardy than *A. pycnantha,* but in other States this is not the general experience. Baron von Mueller recommends planting of *A. decurrens* in worn-out lands overrun with sorrel. It is fond of moisture, and not of too much heat. The Baron also gives its rate of growth as about 1 inch in diameter every year. Mr. J. E. Brown mentions some trees in South Australia 30 feet high and 8 inches in diameter, only 5 years of age, and I can record similar experience near Sydney. It is rather liable to attacks by borers. It is a useful tree for making a quick-growing shelter for vineyards, orchards, &c.

Cultural Notes.—The following notes are, as a rule, directly based upon observation with the *mollis* variety of *Acacia decurrens*, but are more or less applicable to all varieties of *decurrens.*

Mr. Evan Francis writes :—

> In a garden in Bega, a few years ago, I sowed seeds of Black Wattle on 1st September, and on the 1st January, following, plants were measured 11 and 12 feet high ; this, for four months, was enormous growth.

Following is an account by a New Zealand correspondent (Waikato, Auckland), of his experience in regard to this variety, which may be useful for the guidance of others in similar localities :—

> I have about 5 or 6 acres of *mollissima*. I got the seed from Tasmania. They are growing the best of any I have got. They do not make much tap root ; they spread the roots near the surface. They were sown two years ago last month (September), and some of them are 12 feet high, without any shelter. They are the best to remove. I planted an acre with young trees taken out of them twelve months since last March. I took them without any soil, and there is not one dozen in the whole lot that have died ; but I find that after you plant any of the *Acacia* tribe, they do not commence to grow till twelve months after they are planted. I have no doubt that they will grow much better under the bamboo system.

In another letter my correspondent says :—

> Trees four years old are 15 to 28 feet high, and 5 inches in diameter at 3 feet from the ground. They had no shelter.

The following interesting observations of Mr. William Baeuerlen are instructive, as showing the advantages of cultivating natural seedlings of wattle instead of allowing them to take their chance—in other words, they are responsive to any attention. At the same time this method is most successful in rainy, rather cold, districts.

Major's Creek, near Araluen, New South Wales, planted Green Wattles from seedlings in August, from 12 to 15 inches high.

		Height.	Girth.
6 years old	1	25 feet	30 inches, 3 feet above ground.
Do	2	28 ,,	24 ,,
Do	3	21 ,,	21 ,,
4 years old	1	20 ,,	24 ,,
Do	2	18 ,,	20 ,,
2 years old	1	15 ,,	11 ,,

None of the wattles from the place from which these were taken for planting (and some even exceed six years in age) exceed 15 feet in height and 10 inches in girth.

In the same locality, there is a tree ten years old, which is 30 feet in height, and has a girth of 3 feet 7 inches. The tree is remarkably straight and healthy, the bark on the trunk having quite a smooth, young appearance yet. A tree of the same dimensions out in the bush would have a dark, rough, furrowed bark, and would doubtless be twice the age.

Mr. Evan Francis, when at Bega, also experimented with bush seedlings, and this is what he says:—

In six months the trees ranged from 10 to 15 feet in height. The taller trees were in the more sheltered positions. Single specimens in open ground did not succeed half as well as those in the centre of the grove, where they were mutually sheltered. A distance of 9 feet, plant from plant, seemed the correct thing.

At two years the trees were fine saplings of about, on an average, 20 to 25 feet high. We estimated that a yield of from 30 to 40 lb. of dry bark would be given by these trees at four years old, but they reached their prime at six years, when the bark at the lower parts of the trees had great substance, and the yield of dry bark would be fully 60 lb.; and I am sure selected trees would have reached 100 lb.

This Forest Flora is not a work on wattle cultivation; that part of the subject and the quality of wattle-bark has been very fully gone into in my special work on the subject, which has been written for growers, bark-strippers, merchants, tanners, and naturalists.*

I give a list of contents of the work, which I do not intend to repeat in this Forest Flora. I would also state that it contains a complete list, with notes, of all New South Wales wattles, most of which cannot be dealt with in this "Forest Flora," because they do not attain tree size. The work has been a labour of love, and I hope my readers will show their appreciation of these beautiful Australian plants by perusing the information I have given concerning them.

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* "Wattles and Wattle Barks," by J. H. Maiden, 3rd edition, 1906, 103 pp. and 11 plates. Price, 1s. 6d. Government Printer, Sydney.

PART I.

Demand and supply of bark.
  Wattle-bark in Natal.
What New South Wales may do.

THE SOIL.

- (*a*) General considerations.
- (*b*) Preparation of the land.
- (*c*) Moisture.

Objections to Wattle-growing considered.

THE SEED.

- (*a*) Commerce in Wattle Seed.
- (*b*) Quantity of seed required to the acre.
- (*c*) Preparation of seed for germination.
- (*d*) The Bamboo method of tree-planting.
- (*e*) Broadcast sowing.

Addendum.

THE TREE AND ITS BARK.

- (*a*) Pruning and thinning.
- (*b*) Time of year for stripping.
- (*c*) How to strip.
- (*d*) Age and size of trees.
- (*e*) To increase bulk of bark.
- (*f*) Fibre in barks.
- (*g*) Drying of bark.
- (*h*) Grading of bark.
- (*i*) Export, Packing, &c.
- (*k*) Adulterations or Substitutions.

PROFITS AND LOSS AND MINOR INDUSTRIES.

Profits to be derived from Wattle cultivation.
Detailed estimates.
Extracts.
Technical education in leather and tanning materials.
Wattle galls.
Wattle gums.
Wattles as drugs.
Wattle-blossom.
Brief bibliography of Wattle-barks.

PART II.

The best New South Wales Wattle-barks.
  Acacia decurrens group of Wattles.
    „ *pycnantha*, Benth.
    „ *penninervis*, Sieb.
  Acacia binervata, DC.
    „ *elata*, A. Cunn.
    „ *leiophylla*, Benth. (introduced).

PART III.

Notes on New South Wales Wattles.
  A few general remarks on Morphology.
  Wattles and the poets.
  Brief bibliography of the botany of Australian Acacias.
New South Wales Acacias arranged in botanical sequence.
Notes on the species of New South Wales Acacias, arranged in alphabetical order.
Vernacular names.
Index.

Botanical description.—Genus, *Acacia* (see Part XV, p. 103).

Botanical description.—Species, *A. decurrens*, Willd., *Spec. Pl.* iv, 1072.

A handsome tree, glabrous, or more or less tomentose-pubescent.

Branches.—More or less prominently angled, sometimes almost winged.

Pinnæ.—8–15 pairs, or sometimes even more; rarely reduced to 5 or 6.

Leaflets (*pinnules*).—Very numerous (30–40 pairs, or even more); linear, from under 2 lines to nearly 5 lines long, according to the variety.

Flower-heads.—Small, globular, in axillary racemes, the upper ones forming a terminal panicle.

Flowers.—20–30 in the head, mostly 5 merous.

Calyx.—Short, broadly lobed, ciliate.

Petals.—With slightly prominent midribs.

Pods.—Usually 3–4 inches long; about $\frac{1}{4}$ inch broad, or rather more. More or less contracted between the seeds.

Seeds.—Ovate (B.Fl. ii, 414), small as compared with those of most other arboreous acacias.

1. Variety *normalis*, Benth. (B.Fl. ii, 415).

The foliage is more sparse, *i.e.*, less compact and umbrageous, than *mollis*. Glabrous, or the young shoots slightly tomentose-pubescent.

Decurrent angles from the base of the leaf-stalks along the branchlets *extremely* prominent.

Pinnæ.—Usually 7–13 pairs.

Pinnules (*leaflets*).—30–35 pairs. Slightly distant, say $\frac{1}{16}$ inch to 1 line. Long and narrow up to 6 lines. *Many* times longer than broad, typically linear, approaching a mathematical line.

Glands.—Numerous along the primary rhachis. The pinnæ are opposite, and the glands are at, or close to, their junction with the rhachis. Usually only one gland to each pair of pinnæ.

Flower-heads.—Of medium size. About 25 in each variety.

Calyx.—As long as the petals. Ciliate on interior of lobes.

Petals.—Slightly depressed.

Pods.—4 inches in average size. Rather narrow. Fruit compressed somewhat, and contracted a little between the seeds.

The seeds do not appear to vary with the different varieties.

Arillar appendage.—Pale, much shorter than the seed. This applies also to the other varieties.

Bract.—Peltate, ciliate; see Explanation of Plate 87 (II), where further particulars are given.

Botanical Name.—*Acacia*, already explained, Part XV, p. 104; *decurrens*, Latin, "running down or along," decurrent, in allusion to the bases of the leaf-stalks, which run along the branchlets, forming a ridge more or less prominent.

Vernacular Names (var. *normalis*).—The "Black Wattle" of the Sydney district. (N.B.—Australians are not always unanimous or consistent in the use of the terms Black and Green Wattle for varieties of *A. decurrens.*)

"Sydney Wattle," the common Black Wattle of the older colonists.

Aboriginal Name (var. *normalis*).—Formerly known as "Book-kerriking" by the aborigines of the Counties of Cumberland and Camden, New South Wales (Macarthur).

Synonyms (var. *normalis*).—*Mimosa decurrens*, Wendl, *Bot. Beob.*, 57; Vent. *Jard. Malm.* t. 61; *A. angulata*, Desv. *Journ. Bot.*, 1814, ii, 68; DC. *Prod.* ii, 468; *A. sulcipes*, Sieb., *Pl. Exs.*; *A. adenophora*, Spreng. Syst. iii, 140.

Leaves (var. *normalis*).—Attention is drawn to the great length and narrowness of the leaflets in this variety.

Flowers.—It has been thought that the period of flowering affords an infallible guide to the discrimination of at least two varieties, *e.g.*, *normalis*, a winter, and *mollis*, a summer flowerer. Under each variety will be given notes as to the months of flowering of some specimens in the National Herbarium, Sydney. The present list is of var. *normalis*, and other varieties will be dealt with separately. It will be seen that the time of flowering is not an absolute criterion as to the variety.

Knowledge of the flowering period is, however, often useful to people who have devoted particular attention to the wattles of a district. Sometimes the same tree flowers twice in a season, and the period of flowering is affected by climatic influences of a particular district, and a particular season.

Normalis.	Locality.
June	Sydney.
July	Sydney.
,, ...	Campbelltown.
,, ...	Picton and Bargo.
August	Sydney, Barber's Creek, Burragorang.
September	Sydney, Taralga.
October	Bowral to Bullio.

Bark.—A not very good specimen from Campbelltown, stripped in August, yielded 31·5 per cent. of tannic acid, and 57·35 per cent. of extract.

A specimen from Ryde, near Sydney, yielded 32·33 per cent. of tannic acid, and 48·74 per cent. of extract.

Timber.—Of pale colour, more or less brown in the centre. Only useful for fuel, for which purpose it is appreciated for bakers' ovens.

Exudations.—The gum of this species contains a complex carbo-hydrate of the galacto-araban character, and does not differ essentially from gum-arabic, peach-gum or cherry-gum.—Winthrop E. Stone (*Amer. Chem. Journ.*, XVII, 196–199; see also *Journ. Soc. Chem. Ind.*, July, 1895, p. 667).

Dr. Greig Smith, Macleay Bacteriologist, is engaged in a series of interesting researches on the origin of wattle and other gums, and has shown that these gums are of bacterial origin. His researches are published in the Proceedings of the Linnean Society of New South Wales.

Size.—A small or medium sized tree, with a diameter of, say, 9 inches, and a height of 25 to 30 feet.

Habitat.—Apparently confined to New South Wales, and restricted to the eastern portion of it.

It is a coast and coast-mountain variety, occurring chiefly about Port Jackson, Campbelltown, Picton and Bargo Brush, Berrima to Wollondilly, to Goulburn and Taralga.

Its southernmost locality in the National Herbarium is Bateman's Bay, but I have no doubt it extends further.

I do not think I have seen it north of Port Jackson.

2. Variety *mollis*, Lindl.

Botanical description.—Variety *mollis*, Lindley, *Bot. Reg.*, t. 371.

Foliage softly tomentose-pubescent, the indumentum assuming a golden-yellow tinge on the young shoots. Leaflets, 2 to 3 lines long, obtuse; glands numerous along the primary rhachis.

The variety may be more fully described as follows:—

Foliage softly tomentose-pubescent, the indumentum assuming a golden-yellow tinge on the young shoots.

The leaflets are nearly spathulate and besprinkled with fine hairs. Sometimes they are entirely covered with fine hairs, and then they approximate to var. *dealbata*. Sometimes the leaflets are nearly glabrous.

Decurrent angles from the leaf-stalks, *somewhat* prominent. There are all stages of angularity, but never so marked as in *normalis*.

Pinnæ.—8–20 pairs.

Pinnules (leaflets).—30–60 pairs. Closely approximated, obtuse; very short linear, say, 2–3 lines; the length varies; they have measurable width.

Glands.—Numerous along the primary rhachis. The pinnæ are opposite, and the glands are at or close to their junction with the rhachis. Usually only one gland to each pair of pinnæ.

Flower-heads.—Apparently the largest of all the varieties.

Calyx.—Slightly longer than the petals. Ciliate on interior of lobes.

Petals.—Slightly depressed. Few *hairs* (?) near outer edge of apex.

Pods.—2–3 inches in average size. Rather narrow, ripen very tardily. Much contracted between the seeds.

This is a sweet-scented, almost overpoweringly-scented form, and it flowers in the summer or early summer. It is the form which yields the best tan-bark. At the same time it passes imperceptibly into other forms, and I advise landowners not only to have a botanical examination of their wattles, but also to have a chemical examination of their barks.

Botanical Name.—*Mollis*, Latin, soft, in reference to the foliage.

Vernacular Names.—Sometimes called "Black Wattle" in New South Wales, and commonly so called in Victoria and Tasmania, but usually called "Green Wattle" in New South Wales, and occasionally "Silver Wattle." The common Green Wattle of the older colonists.

Aboriginal Names.—Formerly called "Wat-tah" by the aborigines of the Counties of Cumberland and Camden; "Nummerak" of those of the Illawarra district, New South Wales (Macarthur); "Garrong" or "Currong" of the aborigines of Lake Condah, and also of the Yarra, Victoria, aborigines; "Warraworup" of those of the aboriginal station, Coranderrk, Victoria.

Synonym.—*A. mollissima*, Willd. *Enum.* 1053. Figured in *Bot. Reg.*, t. 371; Engler, *Nat. Pflanzen.*, iii, 3, p. 109, fig. 64; Sweet, *Fl. Austr.*, t. 12, as *A. mollissima*; J. E. Brown's *Forest Flora of S.A.*, t. 26.

Flowers.—In the National Herbarium, Sydney, we have flowering specimens in the following months. See p. 46.

Mollis.	Locality, N.S.W.
January	Major's Creek.
"	Araluen, Tallwong, Shoalhaven, Peak Hill, Sydney.
February	Minore, Dubbo.
March	Nyngan.
April	Gulgong.
June	Booral, near Stroud.
July...	Greta, Newcastle, Wagga Wagga.
August	Port Stephens, Condobolin.
September	Burwood, Sydney.
"	Middle Head, Sydney.
October	Illawarra.
"	Port Stephens.
November	Port Stephens, Sydney, Moruya.
December	Major's Creek.
"	Sydney.

October, December, January, February—Tasmania.
September, November, December, March—Victoria.

Aberrant western New South Wales forms referred to below flower—

January—Lue, Mudgee district.	July—Dubbo.
February—Dubbo.	September—Harvey Range, Dubbo.
May—Mount Hope.	November— " " "

Bark.—This variety of *Acacia decurrens* is the one which has made the reputation of the bark. The celebrated Tasmanian and Portland (Victoria) bark is the product of this variety.

I now proceed to give brief descriptions, with analyses, of illustrative samples of this bark, and for practical convenience I divide those of New South Wales into southern and northern localities, taking the Hawkesbury River as a natural boundary.

Southern Barks.

A sample of a smooth green bark from a young tree afforded 33·5 per cent. of tannic acid, and 61·85 per cent. of extract, while a second sample, from an older tree, gave 35·3 per cent. of tannic acid, and 59·05 per cent. of extract. Both were grown near Penrith, New South Wales.

A black bark, slightly rugged, from Mulgoa, Penrith, gave 35·56 per cent. of tannic acid, and 59·2 per cent. of extract. It was known locally as "Green Wattle."

A sample received May, 1890, and analysed the following month, was found to contain 34·85 per cent. of tannic acid, and 61·5 per cent. of extract. It came from Burragorang. It is thicker than most barks of this species, and is beginning to be scaly on the outside. Were it not for that defect it would be a splendid bark. It was allowed to remain a year too long on the tree, a fault not usually to be found with bark-getters.

Another sample, taken from a tree between 40 and 50 feet high and 15 inches in diameter, at a place 12 miles from Burragorang Mountain, where this species was growing in very large quantities, was analysed July, 1890, and found to contain 34·4 per cent. of tannic acid, and 69·33 per cent. of extract. This is a perfect specimen of bark of this species, being of good thickness, smooth, and of good colour.

A sample from Cambewarra, from trees 20 to 30 feet in height, and 6 to 8 inches in diameter, gathered in August, 1886, was found to contain 32·08 per cent. of tannic acid, and 52·16 per cent. of extract. (*Proc. R.S., N.S.W.*, 1887, p. 33.) A bark grown in the same neighbourhood, and analysed in April, 1890, gave only 24·13 per cent. of tannic acid, and 47·1 per cent. of extract. It is a smooth bark, but from a young tree, being only one-eighth of an inch thick, and rather fibrous. Had it been allowed to remain on the tree a couple of years longer, I feel sure that the percentage of tannic acid would have much increased.

A sample from Nerriga (on the high table-land from Nowra to Braidwood) gave the excellent result of 36·3 per cent. of tannic acid, with 62·54 per cent. of extract. (*Proc. R.S., N.S.W.*, 1888, p. 271.) Height of tree, 15 to 20 feet; diameter, 8 to 12 inches. It was stripped in January, and analysed the following August. This is the best sample of *A. decurrens* bark which has hitherto been examined by me.

A second sample from the same district yielded 31·75 per cent. of tannic acid, and 62·35 per cent. of extract; while a third gave 29·25 per cent. of tannic acid, and 59 per cent. of extract. A fourth gave 24·99 per cent. of tannic acid, and 53·96 per cent. of extract.

A bark from Bateman's Bay, collected in February, and said to be known locally as "Silver Wattle,"* yielded the very satisfactory result of 34 per cent. of tannic acid, and 59·45 per cent. of extract. It was obtained from trees 50 feet high and 9 inches in diameter.

A second specimen from the same locality, collected at the same time, and labelled, probably more correctly, "Green Wattle," gave the even better result of 36·25 per cent. of tannic acid, and 60·3 per cent. of extract. It is as good as any Victorian or Tasmanian.

Mr. Thomas Shepherd, an enterprising tanner of Cambewarra, has kindly furnished me with the following information in sending the first sample from Nerriga. Of all New South Wales localities, he prefers Nerriga for *A. decurrens* bark. He says it would be quite equal to Tasmanian if it could be obtained as finely ground. From Cambewarra bark Mr. Shepherd obtains only two liquors, of which the second is very weak, while from the Nerriga bark he invariably obtains three strong liquors. In his opinion the best time for stripping is when the trees are in bud, and have just come into flower. Next to the Nerriga bark he speaks highest of that coming from the Bega district.

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* It is sometimes difficult to tell this tree from the true Silver Wattle (var. *dealbata*), but usually they are different enough.

I have examined a sample of bark called "Green Wattle," from Bell's Creek, Araluen, N.S.W. It was from trees 25 to 30 feet high, with diameters from 6 to 18 inches, was grown on granite soil, and was collected in November, 1888. In April, 1890, it was analysed, with the following result:—Tannic acid, 31·23 per cent.; extract, 64·15 per cent. It is smooth, compact, yields a light-coloured powder with some fibre, is a quarter of an inch thick, and is to be ranked with the best of our New South Wales barks.

Bark from Eden, stripped in November, gave 30·25 per cent of tannic acid, and 51·65 per cent of extract.

A specimen of "Green Wattle-bark," grown at Tombong, Snowy River, N.S.W., was collected in March, 1889. It was obtained from trees 20 to 30 feet high, with diameters 6 to 15 inches, and was grown in granite country. It yielded (April, 1890) 24·63 per cent. of tannic acid, with 45·8 per cent. of extract. This sample is hardly fair to the species. It is rather thin, rugged, covered with lichens, and rather more fibrous than the generality of barks of this variety. In spite of the badly-selected sample, the analysis shows that it is full of promise.

Northern Barks.

Bark from Booral, stripped in June, yielded 28·52 per cent. of tannic acid, and 56·1 per cent. of extract. A second sample from the same place gave 27·5 per cent. of tannic acid, and 57·1 per cent. of extract.

A sample from Raymond Terrace, collected in December, gave 33·20 per cent. of tannic acid, and 56·5 per cent. of extract, showing that good barks can come from the north.

Bark from Gosford, stripped in July, from four-year-old trees, gave 22 per cent. of tannic acid, and 46·4 per cent. of extract.

Victoria and Queensland.

We now turn to the other States. Following are two barks from Casterton, Victoria, stripped in January, and analysed in the following March. A picked specimen, said to be the best obtainable, gave the excellent result of 36·25 per cent. of tannic acid, and 61·65 per cent. of extract, practically the same as that of the Nerriga, New South Wales, bark, already noted.

A second specimen of the same district, sent as an average sample, gave 29 per cent. of tannic acid, and 54·45 per cent. of extract.

The following analysis of a Queensland sample was given by the Commissioners of that State at the Colonial and Indian Exhibition of 1886:—Tannin, 15·08 per cent.; extract, 26·78 per cent. This bark becomes undoubtedly inferior in the warmer climate of Queensland.

A sample of the bark of this tree exhibited at the London International Exhibition, 1862, seemed to the jurors "to be admirably adapted for the manufacture of paper." The fibres of all wattles are, however, of a coarse nature, and its use for fibre is but of museum interest.

Timber.—Timber light, tough and strong; used for staves for beef and water casks in Tasmania. It is an inferior timber, and that of all the varieties is much alike. It is subject to attack by insects. It was formerly used by the Yarra blacks for mulgas (club shields), boomerangs, and spears. Specific gravity, ·773 and ·727 (Report, *Victorian Exhibition*, 1861). Diameter, 6 to 9 inches; height, 20 to 30 feet.

TIMBER EXPERIMENTED UPON BY VICTORIAN TIMBER BOARD, 1884.

The samples tested were each 7 feet in length by 1⅞ inch square, the distance between the bearings was 6 feet, and the weight was gradually applied in the centre until the sample broke.

Local name, Silver Wattle; locality where grown, Waterloo, Victoria; approximate date when the timber was cut, April, 1883; dimensions of tree, 2 feet diameter; date of testing, 28th January, 1884.

Weight of samples, 9 lb., 8¼ lb., 8½ lb.; average weight of samples, 8·58 lb.; average weight per cubic foot, 50·20 lb.; average specific gravity, 0·804; breaking weight of each sample, 6 tons 1 cwt. 9 lb., 6 tons 1 cwt. 4 lb., and 7 tons 2 cwt. 3 lb.; average breaking weight of samples, 752·3 lb.; deflection at point of rupture, 6½ in., 5⅝ in., and 3¾ in.; average deflection, 5·29 in.; average specific strength, 2,053. Geological formation where the trees grew, Mesozoic; elevation above sea-level, about 1,200 feet.

Fungi.—*Uromycladium notabile* (Ludw.) McAlp.

Habitat.—The only form in Tasmania, and the most common one in Victoria; less frequent in the northern districts of New South Wales.

Queensland.—Inland, extra-tropical Queensland.

South Australia.—South of the Murray Desert, embracing the 90-mile Desert and the Tatiara; Mount Gambier District.

In New South Wales this variety flourishes best in the colder districts of this State, chiefly on the southern table-lands, but is by no means confined to the colder districts, as the following specimens in the National Herbarium, Sydney, show:—

Cooma; Mogo, near Moruya, "Green Wattle, *the* tan-bark"; Tallwong, Marulan, Hill Top, National Park, Parramatta (examined by Bentham), Wahroonga, Sydney. It is apparently not common in northern New South Wales, *e.g*, Warialda. Pods nearly glabrous, leaflets more spathulate than var. *pauciglandulosa* and not hairy on the tips; Warialda—More glabrous than the preceding, and further remote from var. *pauciglandulosa*; Warialda—Nearer the *pauciglandulosa* type, but glands abundant; Inverell—almost entirely glabrous.

These northern specimens alone show that vars. *mollis* and *pauciglandulosa* run into each other.

Out West, the variety becomes more stunted, but otherwise nearly normal. Fine, short golden hairs sometimes extend lower than the tips of the branches. Minore, Peak Hill, Condobolin Hill, Coolabah, Nymagee.

Sometimes the leaflets become entirely glabrous, with a few short hairs on the rhachis, further apart, longer and narrower—*e.g*, Wagga Wagga, Gulgong, leaflets further apart as regards the lower portion of the branchlets.

Then we have many western forms which display unmistakable transit to *A. Muelleriana*, Maiden and Baker, with its glabrous, long, comparatively broad leaflets, small flower-heads, and flat, glabrous pods. For example, Harvey Range, Minore. Specimens from Lue, Mudgee District, with the leaflets wide apart, and Yarrowitch to Tia, New England, certainly bear affinity to *A. Muelleriana*, but are, perhaps, even closer to var. *normalis* than to var. *mollis*. These and other forms cannot be clearly defined without figures.

3. Variety *pauciglandulosa*, F.v.M.

Botanical description.—Variety *pauciglandulosa*, F.v.M., in B.Fl. ii, 415.

> Pubescent, but not so softly so as in the var. *mollis*, and sometimes almost hirsute, with the same golden-yellow tinge on the young shoots. Leaflets small, often under 2 lines; glands few, often under only the last 1 or 2 pairs of pinnæ. New England, Clarence and Hastings Rivers, Moreton Bay, &c., also between Archer's and McKenzie's stations, in moist places.—*Leichhardt.*

It may be described in the following words:—

Pubescent, but not so softly so as in the var. *mollis*, and sometimes also hirsute, with the same golden-yellow tinge in the young shoots. The yellowish tinge deepest in this variety, might be termed old gold. Often scabrous.

Decurrent angles from the leaf-stalks somewhat prominent. All stages of angularity, but never so marked as in var. *normalis*.

Pinnæ.—Mostly 8–12 pairs in my specimens.

Pinnules (*Leaflets*).—20–40 pairs. Small, often under 2 lines (Bentham); approximately same shape and size as *mollis*.

Glands.—Few; often only under the last 1 or 2 pairs of pinnæ. They often even require careful search to find them.

Flower-heads.—Of medium size. About 25 flowers in each head.

Calyx.—Not so deeply lobed as other varieties, and less broadly lobed. Ciliate on midrib. In a few flowers dissected the calyx was shorter than in var. *normalis*.

Petals.—Not ciliate. Midrib less distinct than others, if any.

Pods.—Apparently larger than that of any other variety, but perhaps this is not generally true.

Seeds.—Same as in var. *normalis*.

I do not think that this is a strong variety. It runs into var. *mollis* too much. Typical var. *mollis* has more spathulate leaflets than has var. *pauciglandulosa*, and the plant is more angular, and altogether more hairy, and even sometimes scabrous. The fine leaflets are sometimes tipped with hairs. I find the number of glands an uncertain character. Its young tips are decidedly and more extensively golden than var. *mollis*. The young pods are also yellowish.

Vernacular Name.—A "Green Wattle."

Botanical Name.—*Pauciglandulosa*, from two Latin words, signifying "with few glands."

Flowers.—The following indicate some flowering seasons of this variety. See above, pp. 46, 48.

Pauciglandulosa.	Locality.
January	Taree; Narrabri.
April	Richmond River (Rous), N.S.W.
June	County of Gloucester, N.S.W.
July	Brisbane, Queensland; Wallangarra, N.S.W.
August...	Port Stephens, N.S.W.
November	Upper Hastings, N.S.W.
December	Stroud Road, Hunter River, N.S.W.

Bark.—A specimen of bark from Port Stephens, N.S.W., stripped in December, yielded 31·75 per cent. of tannic acid, and 51·55 per cent. of extract.

A sample from Bateman's Bay, N.S.W., stripped in February, from trees 30 feet high, and up to 15 inches in diameter, gave the result of 27 per cent. of tannic acid, and 53·45 per cent. of extract.

Habitat.—So far as our specimens are concerned, it may be looked upon as a northern New South Wales and southern Queensland form. That is to say, it hardly comes south of Sydney.

It also extends to the table-land. Specific localities are:—Gosford, Port Stephens, Booral, Stewart's Brook, Brushy Mountain, Gloucester, Taree, Hastings River, Upper Hastings River, Bellingen, Bolivia, Wallangarra, Rous (Richmond River); Acacia Creek, Macpherson Range.

Under var. *mollis*, Benth., (B.Fl. ii, 415) has the note "Some of Beckler's specimens from Warwick (Queensland) have the numerous glands of this form with the very small leaflets of the following (*pauciglandulosa*)."

I have a specimen of Beckler's before me, also Narrabri, on sand-ridges; Woolooma Mountain, Belltrees, Scone. They seem to me nearest to var. *pauciglandulosa*, and are evidence of the statement I have previously made that vars. *mollis* and *pauciglandulosa* run into each other.

4. Variety *Leichhardtii*, Benth.

Botanical description.—Var. *Leichhardtii*, Benth. in B.Fl. ii. 415.

> More or less hirsute, with spreading hairs. Leaflets small, narrow; glands few. Between Archer's Station and Biron, and towards the Bunya, *Leichhardt*. This seems to connect in some measure *A. decurrens* with *A. pubescens*, but it has the numerous pinnæ of the former.

It may be described as follows:—

More or less hirsute, with spreading hairs. Decurrent angles somewhat prominent (although covered with hairs), but never so marked as in var. *normalis.*

Pinnæ.—8–20 pairs.

Pinnules (leaflets).—15–30 pairs. They are small, narrow; approximately same shape and size as *mollis.* The pinnules appear to be freest from a tomentum of any of the varieties.

Glands.—Bentham says few. But I find them rather numerous, usually commencing half up the primary rhachis, and continuing to the last pair.

Flower-heads.—Apparently the smallest of the varieties.

Flowers.—About 25 in each head.

Calyx.—Less ciliate than in other varieties.

Petals.—Slightly ribbed, with few hairs, which spread as they near the apex.

Pod.—Apparently nearest to that of var. *normalis.*

This might be described as an extreme form of var. *pauciglandulosa.* It resembles it strongly in general appearance, but has a profusion of comparatively long, weak hairs, particularly on the rhachises, which give it a rather ornamental aspect. The leaflets have, however, fewer hairs than var. *pauciglandulosa.*

Botanical Name.—*Leichhardtii*, in honour of Dr. Leichhardt, the explorer, who first collected it.

Vernacular Name.—A "Green Wattle."

Synonym.—*A. Arundelliana*, Bailey.

I certainly cannot follow Bailey in this matter. It is impossible to separate it from var. *pauciglandulosa.* For example, the form common on the South Coast, *e g.*, Yalwal and Nelligen and Cockwhy Creek. Another transit form is Tenterfield to Sandy Flat, near the Queensland border. "Green Wattle, superior as tan bark to Black." It may be looked upon as var. *pauciglandulosa* with long hairs, or var. *Leichhardtii* as var. *pauciglandulosa* with short ones. It certainly is not a species distinct from *A. decurrens.*

Flowers.—Specimens of the typical variety in the National Herbarium, Sydney, in flower do not bear the date of collection. The transit forms just alluded to were in flower,—Tenterfield to Sandy Flat, December; Nelligen, September.

Bark.—The bark of this variety is used by the local tanners, and is spoken of fairly well as regards percentage of tannin, but is not much liked on account of its being considered too hard and fibrous, and therefore difficult to break up in the mill.

It is a common belief amongst tanners (and at present I am not prepared to say what basis of truth it has), that barks much subjected to frost and snow are much richer in tannin than those not so subjected. The present sample is from a tree grown in a very cold district. It was collected October, 1888, at Monga, from trees 20 to 25 feet high, and 6 to 18 inches in diameter, growing on granite soil. Thickness of bark about $\frac{3}{16}$ inch. A smoothish bark of a light colour, but forming a rather fibrous powder. It was analysed April, 1890, and found to contain 26·4 per cent. of tannic acid, and 45·25 per cent. of extract.

This variety would appear to attain exceptional dimensions at Yalwal, not far from Nowra, as I have been informed that trees in that locality have been stripped of the following diameters, viz., 9, 12, 18, and 36 inches. The last diameter is certainly extraordinary, and I have not heard of authentic measurements of any variety of *Acacia decurrens* giving over 24 to 30 inches, and then only in exceptionally favourable localities; but my information appears to be quite reliable, and I have heard from another source of the immense size of the trees in this locality. The bark is not less than 1 inch thick, and must have come from a huge wattle. It is scaly on the outside, and reminds one of mountain hickory bark (*A. penninervis*). It was stripped in March and analysed the same month, with the result of 29·25 per cent. of tannic acid, and 46·75 per cent. of extract. A second specimen from a tree 18 inches in diameter gave 25·75 per cent. of tannic acid, and 40·8 per cent. of extract. A third specimen from a tree 9 inches in diameter gave 26 per cent. of tannic acid, and 44·05 per cent. of extract.

A poor, thin, too-early stripped specimen (near the type) from Tewantin, Queensland, stripped in July and analysed in September, gave 22·1 per cent. of tannic acid, and 41·6 per cent. of extract.

Habitat.—This form is best developed in South Queensland.

Queensland.

Between Archer's Station and Biron, and towards the Bunya (Leichhardt) are localities given by Bentham. It also occurs at Maroochie.

New South Wales.

Mogo, Moruya, Nelligen, Bateman's Bay. Found also in the Monaro and Braidwood districts, and in the Jingera Mountains.

The range of this variety should be further inquired into.

5. Variety *dealbata*, F.v.M., "The Silver Wattle."

Botanical description.—Var. *dealbata*,[*] F.v.M.

A handsome tree, closely resembling the var. *mollis* of *A. decurrens*, and to be added, perhaps, to the varieties of that species as proposed by F. Mueller, but the branches and foliage are very glaucous or hoary, with a minute pubescence not assuming a golden tinge on the young shoots.

Pinnæ.—Usually 10 to 20 pairs.

Pinnules (leaflets).—30 to 40 pairs; linear, crowded, 2 to 3 lines long; glands, usually numerous.

Flower-heads.—Small, in axillary racemes paniculate at the ends of branches, as in *A. decurrens.*

Pod.—Broader, not contracted between the seeds, and more glaucous.

Var. *dealbata* may be looked upon as an extreme form of *mollis.* The indumentum is usually greater (more compact, with shorter hairs) than in *A. mollis*, but of the same character. It should also be borne in mind that the young tips are sometimes distinctly yellowish.

The fruits also are often distinctly constricted between the seeds, *but usually only when quite ripe.*

Where var. *dealbata* and var. *mollis* occur in the same district, the former prefers the river banks and valleys and the latter the mountain slopes.

Botanical Name.—*Dealbata*, Latin, whited, hence white-washed, in allusion to the whiteness of the stem (and foliage).

Synonyms.—*Acacia dealbata*, Link.; *A. irrorata*, Sieb. in Spreng. *Syst.* iii, 141.

Vernacular Name.—The wattle which most commonly goes under the name "Silver Wattle." There are, of course, several other wattles known as "Silver Wattle" in restricted areas.

Aboriginal Names.—Formerly called "Ur-root" by the Yarra (Victoria) aborigines. Native name on the Castlereagh River, N.S.W., "Eumung," according to the late Rev. Dr. Woolls, but I would point out that at least three other western New South Wales wattles share that name.

Flowers.—At one time a well-known London firm of perfumers stated that they prepare their "Extract of Australian Wattle" from the flowers of this wattle, which is grown in enormous quantities on the Riviera in southern Europe for decorative purposes.

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[*] I attribute this variety to Mueller on Bentham's evidence (B.Fl. ii, 415), "*A. dealbata* . . . . to be added, perhaps, to the varieties of that species as proposed by F. Mueller. . . . This, the "Silver Wattle" of the colonists, is unhesitatingly united with *A. decurrens* by F. Mueller." At the same time I do not know where he established the var. *dealbata*, and of late years, *e.g.*, in his "Census," and also his "Key to the System of Victorian Plants," he looked upon *A. dealbata* as a species.

Bark.—Some specimens of bark from Quiedong, Bombala, N.S.W., yielded the author 21·22 per cent. of tannic acid, and 39·86 per cent. of extract. They were from trees 12 to 18 inches in diameter and 20 to 30 feet high, and were grown on limestone country (*Proc. R.S., N.S.W.*, 1887, p. 92). A second sample from the same district gave 17·1 per cent. of tannic acid, and 39·3 per cent. of extract. They were apparently from an old tree. The barks form a rather fibrous powder.

I have examined a sample from the Delegate River, N.S.W., where the trees are growing in the brush (rich jungle), in chocolate soil, attaining a height of 60 to 100 feet, with a diameter of 1 to 2 feet. Bark collected in April, 1889, yielded the following April 25·9 per cent. of tannic acid, and 45·7 per cent. of extract. This has the general appearance of *A. decurrens* bark, but is in layers, separable with a little difficulty, more fibrous, and has the appearance of having been dusted on the outside with a white powder. The whitish appearance does not rub off, and the stem looks as if it had had a coat of lime-wash. It is the work of a lichen.

A perfectly smooth, thin, silvery or ash-grey bark, from near Penrith, N.S.W., gave 24·13 per cent. of tannic acid, and 47·85 per cent. of extract.

Barks received from Mr. C. Brownrigg, gathered in June, and obtained from parish of Beaufort, Cowra District, diameter of tree 10 inches, yielded 16·5 per cent. of tannic acid, and 42·4 per cent. of extract. A second sample from the parish of Calout, in the same district, from a tree 7 inches in diameter, gave 20·3 per cent. of tannic acid, with 43 per cent. of extract. Mr. Brownrigg kindly furnished the following notes with these samples :—*Beaufort sample*—" Extensive forests of good, sound, old and young trees, not affected by the ringbarking of other timber." *Calout sample*—" Since the ringbarking of the box and other timber, nearly all the old wattle trees have died away ; a young forest appears to be growing up."

Bark from county Auckland (Monaro), and stripped in November, gave 24 per cent. of tannic acid, and 42·55 per cent. of extract.

Two samples from the Cooma District gave 24 per cent. of tannic acid, with 49·6 per cent. of extract, and 25·5 per cent. of tannic acid, with 51·2 per cent. of extract, respectively. The latter bark is worthy of special mention. It is quite black, having not a trace of the whitish appearance generally found on the bark of this species. It was brought to me as Green Wattle (*Acacia decurrens*, var. *mollis*), and there seemed no necessity to doubt the diagnosis. No expert could have told the difference between it and Green Wattle if he had not been permitted to test it. It is a good instance of the deceptiveness of appearances.

" Silver Wattle " bark may be assumed to contain about 25 per cent. of tannic acid in the best samples.

In Tasmania the destruction of these trees has often been recommended in order to let var. *mollis* grow, and this advice is probably sound, but only in cases in which one or other has to be sacrificed.

I think I have adduced sufficient evidence to convince intelligent people that the bark is by no means a worthless one, and barks inferior even to this are locally used in districts not favoured with the alternative of the use of such a bark as other varieties of *decurrens*. I hope that barks in a particular district will be tried on their merits, and not be condemned without trial.

In insisting on the general principle of assay of barks, just as a man engaged in the mining industry is always careful to sample his stone as occasions require, I am quite aware of the special circumstances of Tasmania as regards the "Silver Wattle," and that the case in that State against this particular variety is stronger than it is in our own. In Tasmania the "Silver Wattle" grows more in spars than with us; its bark has a more than ordinary tendency to shrink; it is tough and fibrous (though not to such an extent as *A. binervata*, for instance). As wattles take longer to mature in Tasmania than with us, it will be quite understood that I am in no way reflecting on the wisdom of the advice of letting the cultivation of the best species remain unimpeded.

A New Zealand (Auckland) correspondent states that his four-year-old var. *dealbata* trees are 35 feet high in a sheltered place, with a diameter of 4 to 8 inches at 3 feet from the ground. They grow quicker than var. *mollis* in his particular district. Var. *dealbata* is not indigenous in New Zealand (nor is, in fact, any *Acacia*), and it is a pity that this species has been introduced into that colony for its yield of tan-bark, as I understand has been done in several instances, whether deliberately or by a mistake in seed I am unable to say.

The "Silver Wattle" sometimes obtains an enormous size in Tasmania, Victoria, and southern New South Wales. In Tasmania, Backhouse measured a tree 11 feet 2 inches in girth, and "Silver Wattles" approaching 100 feet in height have frequently been found in all three States.

Timber.—Used in Tasmania for cask staves and treenails. It is also useful for rustic work and for fuel. It is more used in Tasmania than in the other States. I notice that the Tasmanian Railway Department exhibited one log, six planks, one slab, 6 feet by 16 inches by 2½ inches, from Scottsdale Line, at an international exhibition. It is, however, not a timber of the first class. The wood was used by the Yarra blacks for making the handles of tomahawks. The piece of a bough chosen for a handle was pared on one side as far as the pith; it was then heated in the ashes of the fire and bent with the hands.—Brough Smyth ("Aboriginals of Victoria," i, 378).

This Acacia has been naturalised on the Nilgiris (India) since 1840. The following is interesting, as showing the facility with which it can be acclimatised in Southern India :—

> Ootacamund (Madras) was till recently completely overrun with this wattle; but, owing to the persistent crusade waged against it both by the municipality and house-owners, its progress has been held in check, only a few full-grown trees being left, though much remains still to exterminate it. The myriads of suckers which spring from the extensive and encroaching wattles come up with renewed vigour and amazing rapidity as fast as they are cut down, and form an inexhaustible fuel reserve.—*Madras Mail.*

It is being tried in plantations in the hills of the Punjab, North-West Provinces, and Sikkim. A specimen of timber cut from a tree 11 years old, 46 feet high, and about 12 inches in diameter, is thus described by Mr. Gamble :—

> Wood moderately hard, light-brown, but warps considerably. Pores small, often in short linear groups. Medullary rays short, fine, and moderately broad, well marked on a radial section.

Colonel Beddome, in his report on the Nilgiri Plantations for 1878, says this wattle grows very readily from the stool, but comes up in a dense mass of small, twig-like stems, so that it can only be depended upon for very small firewood.

Exudations.—See Heckel and Schlagdenhauffen* for an exhaustive account of this gum. The species is said to yield a soluble gum in Java, on the authority of Dr. de Vrij (*Chem. and Drugg.*, Aug. 20, 1892, p. 260). Lauterer† gives an analysis of this gum.

Size.—It attains the largest size of any of the varieties of *A. decurrens.* In Tasmania it attains the dignity of a large forest tree, but in most of the States it is of medium size.

Fungi.—*Uromyces phyllodiorum,* B. and Br.; *Uromycladium alpinum,* McAlp.; *U. bisporum,* McAlp.; *U. notabile* (Ludw.), McAlp.

Habitat.—The "Silver Wattle" is found in Tasmania, Victoria, New South Wales, and a not strictly typical form occurs in the extreme south of Queensland.

NEW SOUTH WALES.

Southern Localities (in National Herbarium, Sydney).—Jindabyne, Snowy River; Tumut; McLachlan River, Nimitybelle to Tantawanglo Mountain; Barber's Creek; Wingello; Berrima; 15–16 mile-post, Wombeyan Caves to Taralga; Queanbeyan (with a yellowish indumentum, and certainly constricted between the seeds. The indumentum in this variety may sometimes be very sparse, and sometimes consist of a glaucous covering).

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* "Sur quelques gommes d'Acacia (*dealbata*) et d'Eucalyptus (*leucoxylon* and *viminalis*)." Le Naturaliste, 2nd Serie, No. 80, p. 151 (1st July, 1890).

† "Gums and Resins exuded by Queensland plants chemically and technologically described." From pages 35–80 of F. M. Bailey's Botany Bulletin No. XIII (April, 1896). "Contributions to the Queensland Flora."

Western Localities.—Faulconbridge; Mount Banks or King George, with bright yellow tips; Jenolan Caves; Kerr's Creek, Orange; Parkes Water Supply.

Northern Localities.—Acacia Creek, Macpherson Range, near var. *mollis*; Apsley Falls; Stewart's Brook, showing transit to var. *pauciglandulosa.*

It is very widely diffused in New South Wales, attaining its greatest development in the valleys of the Southern Table-land, in cold situations approximating to those in Victoria and Tasmania.

Propagation.—I have already referred to its rapid growth in India, and to its cultivation in Southern Europe. The following unpublished notes were written some years ago, and give some idea of the appreciation it receives in the Northern Hemisphere :—

> It appears to be one of the hardiest of the genus, as it is one of the most ornamental. At Bayonne, in the Lower Pyrenees, Madame Leon made a considerable plantation of it a few years ago which has now developed into a charming miniature forest. Even as far north as Nantes it flourishes and resists ordinary winters. In very severe winters it is sometimes killed down to the ground, but it throws up again with increased vigour. The foregoing particulars we glean from the organ of the Central Horticultural Society of France, and we have no doubt that this Acacia will prove equally as hardy in the West of England.

Its white foliage contrasts well with the sombre foliage of many Australian trees, and I certainly think it is worthy of more extensive cultivation for ornamental purposes. We take far greater pains over less meritorious exotics.

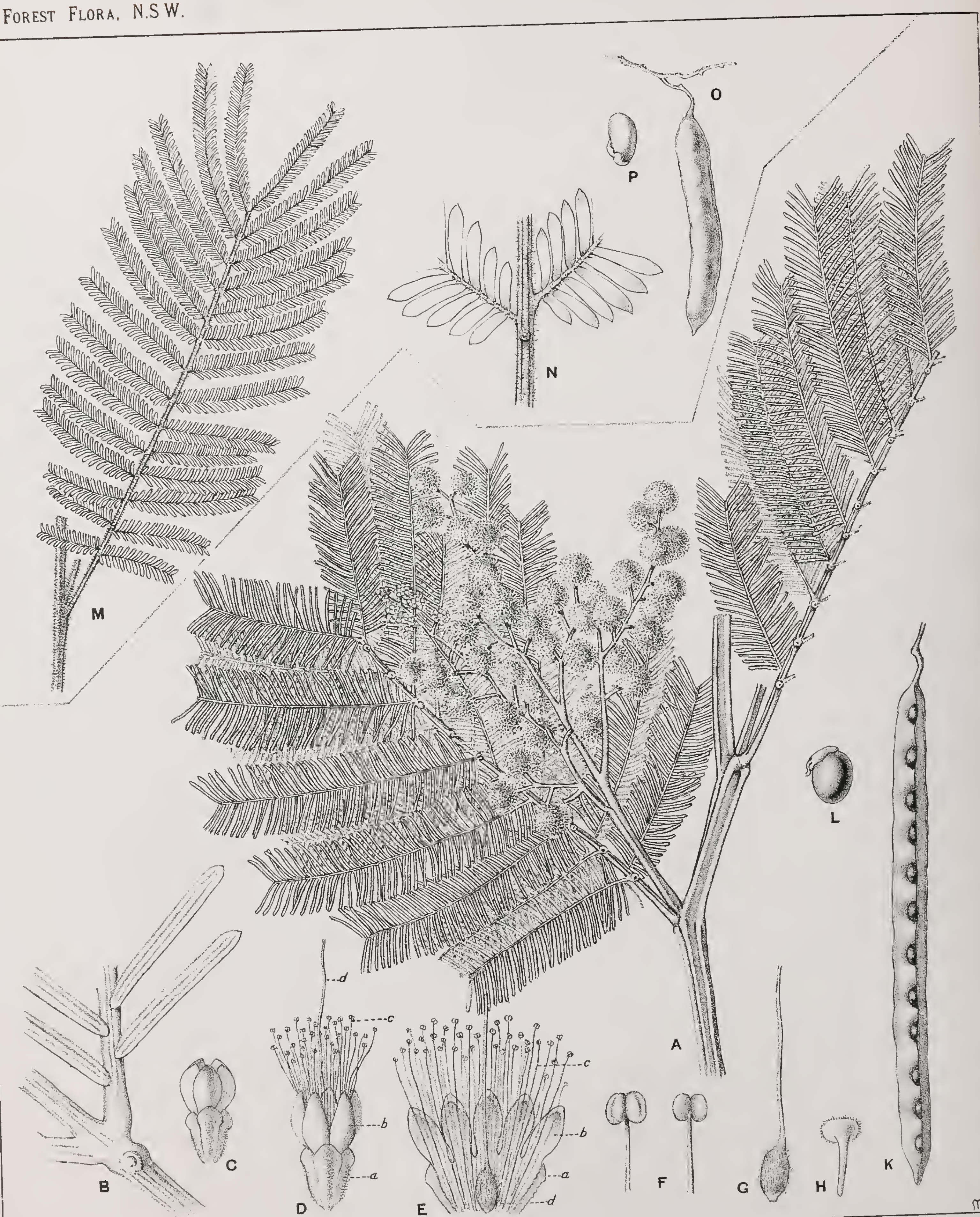
6. Variety *lanigera*, Maiden, in "Wattles and Wattle-barks," 3rd edition, 1906, p. 41.

A small tree or tall shrub, characterised by every part of it—old and young leaflets, rhachises and twigs, and pods—being densely covered with a white or brown indument.

It may be described as an "exaggerated" form of var. *dealbata*, but so much more woolly-hairy than var. *dealbata* as to be worthy of some designation.

Leaflets about twenty and over, coarser than those of var. *dealbata*, the variety it most closely resembles. Harvey Range, J. L. Boorman, 1905 (type). Closely allied forms from Gloucester Buckets, E. Betche, 1882; J.H.M., 1897; Parkes Water Supply, J.H.M., 1897.

This remarkable form will be better understood on reference to the Plate. It seems to me the handsomest variety of the species, and worthy of cultivation for ornamental purposes. It grows in dry localities.



BLACK WATTLE, GREEN WATTLE.
(*Acacia decurrens*, Willd.)

EXPLANATION OF PLATE 87.

A. decurrens var. *normalis*, A—L.
,, var. *Leichhardtii*, M—P.

(N.B.—Var. *Leichhardtii* is closest to var. *pauciglandulosa*, and has been put on Plate 87 as a matter of convenience.)

Variety *normalis*.

A. Flowering branch. Note the compound, bipinnate leaf. Pinna, plural pinnæ (Latin, a feather), is a primary division of a pinnate leaf. Its leaflets are sometimes themselves pinnate, as in this case.

B. Portion of leaf (pinna), much magnified, showing the individual pinnules or leaflets, or secondary pinnæ.

Note the glands in A. and B. They vary a good deal in *A. decurrens*, and the glands depicted in the various drawings in Plates 87 and 88, while taken from average specimens, must not be looked upon as absolute as regards either number or position.

C. An individual bud removed from a head of flowers.

D. Flower, showing—
 (*a*) Calyx.
 (*b*) Corolla.
 (*c*) Stamens.
 (*d*) Style.

E. Flower, opened out, showing—
 (*a*) Calyx.
 (*b*) Corolla.
 (*c*) Stamens.
 (*d*) Pistil.

Bentham gives the necessary caution in this genus: "The characters derived from the united or free sepals must be used with caution, for the petals, at first united, often separate as the flowering advances."

F. Stamens, front and back view.

G. Pistil.

H. A bract or scale enclosing the calyx of each individual flower-bud in the head. Speaking of bracts in this genus, Bentham (B.Fl. ii, 301) says: "The bracts are almost always narrow, closely packed in with the flowers, and more or less dilated at the end, sometimes quite peltate; generally the outer ones of each head are flatter, the inner ones more slender, and proportionately more dilated at the end, where they are usually ciliate and sometimes acuminate."

K. Ripe pod.

L. Seed.

All parts, except pod, much enlarged.

A fine coloured drawing of var. *normalis* will be found in *Illustrated Flowering Plants and Ferns*, No. 13, Maiden and Campbell (Government Printer, Sydney).

Variety *Leichhardtii*.

M. Leaf.

N. Portion of leaf much magnified. Note the comparative absence of hairs from the pinnules. The hairs on the rhachis are hardly sufficiently accentuated.

O. Ripe pod. This is the smallest pod of all the varieties, but, as I have them from only one locality, I should not like to say that the pods are always so small.

P. Seed.

EXPLANATION OF PLATE 88.

A. decurrens var. *pauciglandulosa*, A—C.
,, var. *mollis*, D—G.
,, var. *dealbata*, H—N.
,, var. *lanigera*, O—R.

Variety *pauciglandulosa.*

A. Leaf, natural size. Note how the pinnæ are separate from each other on the rhachis.
B. Portion of leaf much magnified. Note the shortness of each pinnule.
C. Pod. Note its comparatively large size.

Variety *mollis.*

D. Portion of leaf, natural size.
E. Portion of leaf, showing the individual leaflets, magnified.
F. Pod. Note that it is much constricted between the seeds.
G. Seed.

In this variety, as regards the flowers, the calyx is very ciliate round the top, and the ovary is quite glabrous, but the drawings have not been reproduced.

As regards Mr. R. T. Baker's var. *Deanei*, a set of drawings was prepared; but as the two plates were so full, and they scarcely show any difference from var. *mollis*, they have not been reproduced. In the flowers examined, the petals are broad, with hairs at the top, outside. The glands are as in var. *dealbata*.

Variety *dealbata.*

H. Portion of leaf, natural size.
K. Portion of leaf, magnified.
L and M. Pods. L is a pod examined by Bentham; hence his remark, "not contracted between the seeds." M is a perfectly authentic pod of this species, and is introduced to show how the character "not contracted between the seeds," which is usually employed to make an important difference between vars. *mollis* and *dealbata*, breaks down.
N. Seed

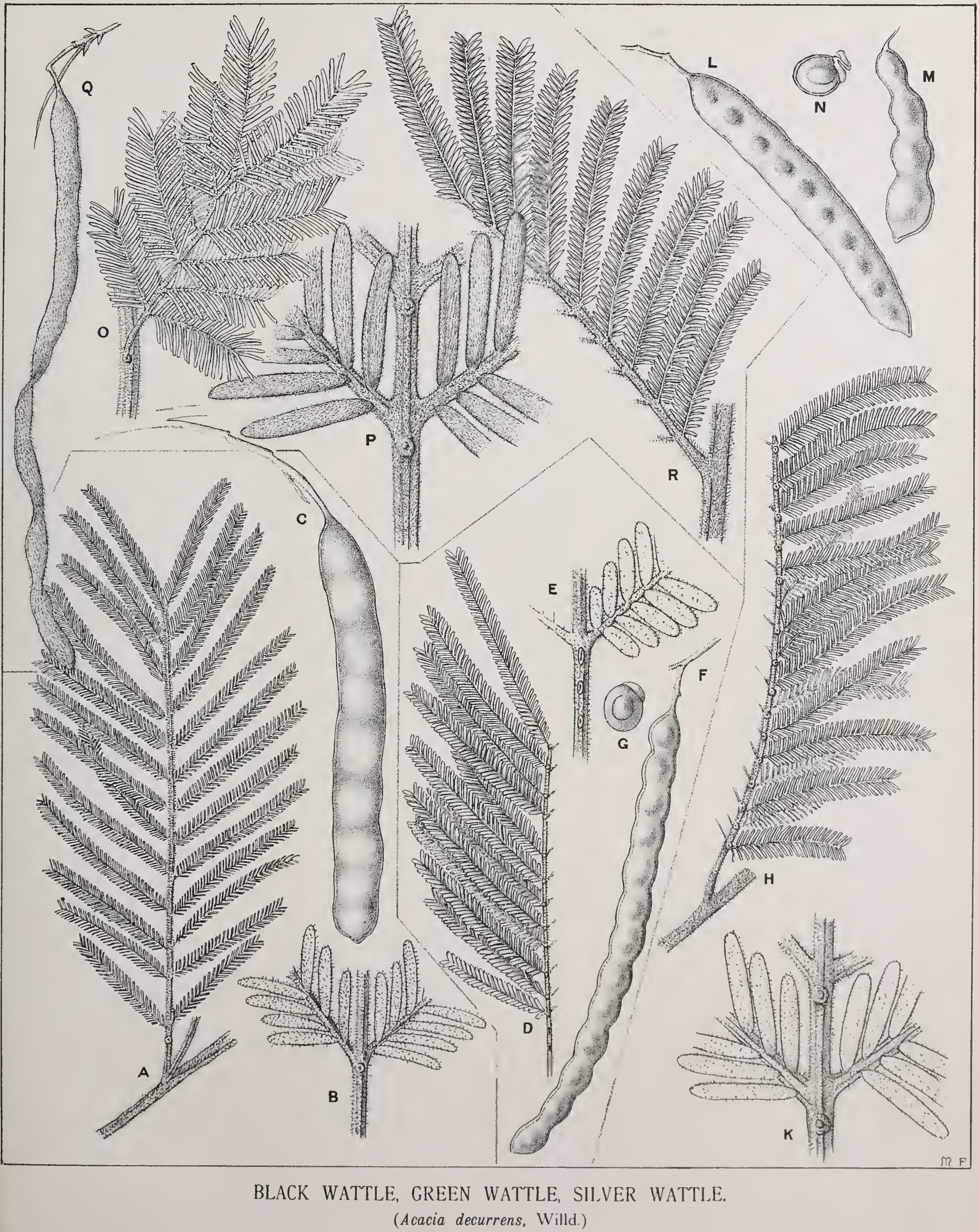
Variety *lanigera.*

O. Leaf, natural size. Notice its intense hairiness. It is drawn from the type (Harvey Range, near Dubbo).
P. Portion of leaf, magnified.
Q. Pod; drawn from the type. Notice its intense hairiness. No pod of another variety is hairy at all, so far as I know.
R. Portion of leaf, natural size. It is drawn from the Gloucester specimen, E. Betche.

Drawings of a flower have been made, but not reproduced. Back of the petals not quite smooth, as in var. *normalis*.

N.B.—It would take many plates to figure all the forms of *A. decurrens* I have seen.

Sydney: William Applegate Gullick, Government Printer.—1907.



BLACK WATTLE, GREEN WATTLE, SILVER WATTLE.
(*Acacia decurrens*, Willd.)

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39.—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No 52.—The Mugga ; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.).

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

PART XVI (ISSUED JUNE, 1905).

No. 64.—The Weeping Myall (*Acacia pendula*, A. Cunn.).
No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—The Drooping She-Oak (*Casuarina stricta*, Ait.).
No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—The Cudgerie (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—The Giant Gum Tree (*Eucalyptus regnans*, F.v.M.).
No. 73.—The Black She-Oak (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—The Yellow-wood (*Flindersia Oxleyana*, F.v.M.).
No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
No. 76.—The Bull Oak (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

PART XX (ISSUED JULY, 1906).

(*Sixteen Plates.*)

Volume III.

PART XXI (ISSUED AUGUST, 1906).

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(*Two Plates.*)

No. 78.—THE BLACKBUTT OR PEPPERMINT (of New England) (*Eucalyptus Andrewsi*, Maiden).

No. 79.—THE THREADY-BARKED OAK (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII (ISSUED FEBRUARY, 1907).

No. 80.—THE HILL FLINDERSIA (*Flindersia collina*, F. M. Bailey).

(*Two Plates.*)

No. 81.—THE BROAD-LEAVED MESSMATE (*Eucalyptus obliqua*, L'Hérit.).

No. 82.—THE CEDAR WATTLE (*Acacia elata*, A. Cunn.).

THE FOREST FLORA

OF

New South Wales.

J. H. MAIDEN.

VOL. III. PART 4.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXIV OF THE COMPLETE WORK.

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No. 2.—The Rusty Fig (*Ficus rubiginosa*, Desf.).
No. 3.—The Turpentine Tree (*Syncarpia laurifolia*, Ten.).
No. 4.—The Narrow-leaved Pittosporum (*Pittosporum phillyræoides*, DC.).

PART II (ISSUED MARCH, 1903).

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(*Two Plates.*)
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No. 19.—A Cupania (*Cupania anacardioides*, A.Rich.).

PART VI (ISSUED FEBRUARY, 1904).

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXIV.

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The Honourable the Secretary for Lands.*

Published by Authority of
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Sydney:
WILLIAM APPLEGATE GULLICK, GOVERNMENT PRINTER.

1907.

PRICE, 1/- per Part, or 10/- per dozen Parts, payable in advance.

No. 86.

Dysoxylon rufum, Benth.

The Bastard Pencil Cedar.

(*Family MELIACEÆ).

Botanical description.—Genus, *Dysoxylon* (see Part XXIII, p. 27).

Botanical description.—Species, *D. rufum*, Benth., in *Flora Australiensis*, i, 382.

A slender tree of 30 to 40 feet (it grows much larger, J.H.M.), the young branches, petioles, and the underside of the leaf clothed with a soft, often rust-coloured pubescence.

Leaves.—1½ to 2 feet long, leaflets numerous, very shortly petiolate, ovate-lanceolate or lanceolate, acuminate, 3 to 6 inches long, very oblique at the base, glabrous on the upper side.

Panicles.—Axillary or lateral, not much branched, pubescent.

Flowers.—Sessile.

Sepals.—5, almost free, orbicular, imbricate, about 1 line long.

Petals.—5, pubescent, ½ inch long, adhering to the staminal tube about the middle.

Staminal tube.—Truncate, with 10 retuse short lobes or teeth; anthers tipped with a short point.

Disc.—Broadly tubular, very hairy.

Ovary.—Hirsute, 5-celled, with 2 ovules in each cell.

Fruit.—Depressed-globular, 1 inch diameter, densely hirsute, with short, rigid, almost golden hairs.

Seeds.—Arillate.

There is a var. (?) *glabrescens*, Benth. (*loc. cit.*)—"Leaves quite glabrous. Fruit tomentose, with very short golden hairs, Rockhampton, Thozet," which might be looked for on our northern rivers.

Botanical Name.—*Dysoxylon*, already explained (see Part XXIII, p. 30); *rufum*, Latin, reddish, alluding to the rust-coloured hairs (pubescence).

Vernacular Names.—The wood known to the colonists as "Bastard Cedar-pencil wood." (B.Fl. i, 382.)

Called "Bastard Pencil Cedar" on the Wollombi River—(late Augustus Rudder). Called "Deal" at Port Macquarie—(Forester G. R. Brown). No local name in Grafton district—(District Forester Wilshire).

Called "Stinkwood" at Tintenbar, Richmond River, because of the fetid odour of its timber.

---

* Formerly Natural Order, the latter term, in this sense, having been abolished by the International Botanical Congress, Vienna, 1905.

Aboriginal Names.—" Kiddar-Kiddar " was the old aboriginal name of the Tweed River natives.

" Woggi-Amabbic " of the Clarence and Richmond River blacks, according to the late Mr. Charles Moore.

Synonym.—*Hartighsea rufa*, A. Richard, Sert. Astrolabe 29, t. 11.

Leaves.—Pendulous in habit, bright green on the upper surface, paler beneath. The veins and young shoots with a rusty vestiture.

Flowers.—They have an ill-smelling, alliaceous, almost fetid odour during drying, and so have the fruits. On the other hand, a label in Mueller's handwriting (doubtless from information at second hand) says: " Flowers remarkably sweet-scented." Perhaps an illustration of the proverb, " De gustibus non est disputandum " (there is no accounting for taste).

Fruit.—The colour of the fresh fruits is so bright as to be called golden or gamboge. It varies from that to orange and rust-coloured.

I am very anxious to obtain the fruit of the Red Bean (*Dysoxylon Muelleri*) for figuring. Will any friend on the Northern Rivers kindly bear this request in mind? What is wanted can readily be seen by a reference to the figure of any other *Dysoxylon* in this work.

Bark.—Smooth, pale grey.

Timber.—It is fetid (onion-like) when fresh, is a fissile soft-wood, nearly white, but the heart-wood deep reddish brown. A useful timber for cabinet work, and belonging to the Cedar class.

" The wood is nicely grained, and used for various purposes, but principally for cabinet work."—(Walter Hill.)

"Pale-coloured or white; heart reddish-brown."—(District Forester Wilshire.)

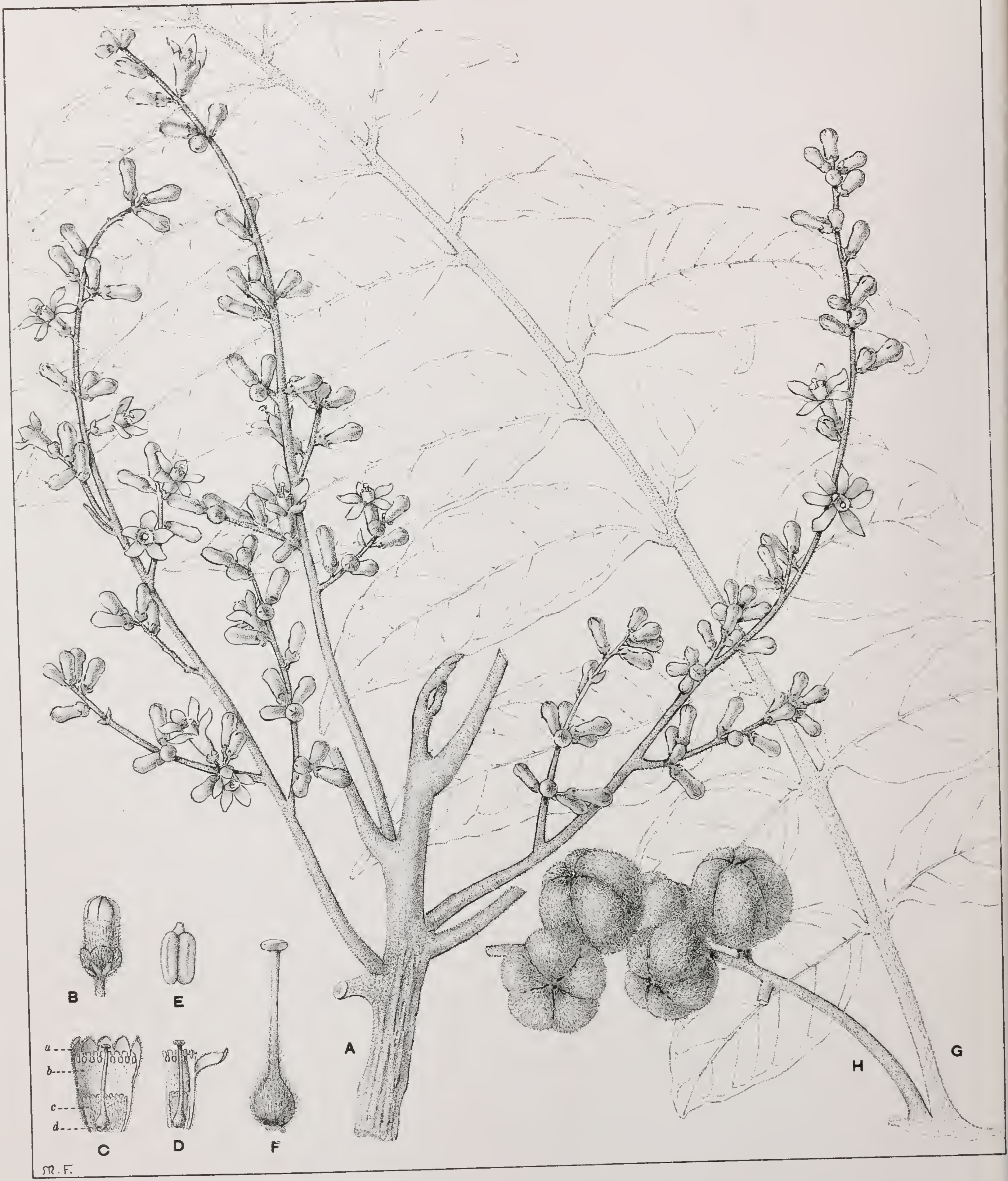
Size.—A large tree, about 80–100 feet high, girth 6–10 feet.

Habitat.—Confined to the brushes of the Northern Rivers of New South Wales and southern Queensland.

" Fairly plentiful in the scrubs (brushes) at Nymboida and Kangaroo Creek, 30 miles from Grafton."—(District Forester Wilshire.)

Not rare in the Clarence and Richmond brush forests: also in those of the Macpherson Range.

It does not appear to have been collected south of Port Macquarie.



BASTARD PENCIL-CEDAR.

(*Dysoxylon rufum*, Benth.)

EXPLANATION OF PLATE 89.

- A. Flowering branch.
- B. Bud.
- C. Flower opened out, showing—
  - (*a*) Corolla.
  - (*b*) Staminal tube.
  - (*c*) Tubular disc.
  - (*d*) Pistil.
- D. Part of flower.
- E. Anther.
- F. Pistil.
- G. Leaf (composed of leaflets).
- H. Fruits.

No. 87.

Eucalyptus Planchoniana, F.v.M.

Bastard Tallow-wood.

(Family MYRTACEÆ.)

Botanical description.—Genus *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species *Planchoniana,* F.v.M. in *Fragmenta Phyt. Austral.* xi, 43 (November, 1878). Following is Mueller's description, taken from the "Eucalyptographia":—

Branchlets very angular.

Leaves scattered, sickle-shaped-lanceolar, prolonged into a narrow apex, slightly less shining beneath, not pellucid-dotted, with subtle, much spreading, not crowded veins, the circumferential vein somewhat removed from the edge.

Flowers.—3-7 together on solitary axillary, broadly compressed stalks.

Stalklets thick, very short, or hardly any.

Tube of the calyx cylindrical-semiovate, furrowed.

Lid (*Operculum*) from a semiovate base, narrow-conical, about as long as the tube, both longitudinally streaked.

Stamens all fertile.

Anthers ovate or roundish-cordate, opening with longitudinal slits.

Style rather long.

Stigma not dilated.

Fruit comparatively large, globose-ovate, truncated, 3–4-celled, streaked by angular lines; their margin narrow, vertically descending; valves short, deltoid, rather deeply enclosed.

Seeds without any appendage; the sterile not much smaller than the fertile seeds.

As a matter of convenience of reference, Mueller's original description of the species, taken from the *Fragmenta,* is given herewith:—

"Arborea, ramulis acutangulis, foliis falcato-lanceolatis tenui-acuminatis concoloribus remotiuscule et persubtiliter penniveniis imperforatis, vena periphericà a margine evidenter distante, pedunculis axillaribus solitariis dilatatis ancipiti-compressis 3–7– floris, pedicellis vix ullis, alabastris junioribus ellipsoideo-cylindraceis basim versus compressis angulosis, fructibus majusculis globoso-ovatis truncatis angulato-striatis quadrirarius tri-loculatis, margine orificii satis tenui fere verticaliter descendente valvis inclusis seminibus apteris, fertibus pleraque sterilia magnitudine parum excedentibus. In collibus aridis subarenosis prope sinum orarium Moreton Bay; F. Bailey. Folia 4–6″ longa, ⅔–1⅓″ lata, nitidula. Stomata solum hypogena, circiter 165,000 intra pollicem quadratum. Pedunculi petiolos superantes, pollicares vel paulo longiores, superne 2‴ lati. Flores evolutos nondum accepi. Alabastra circiter semipollicaria. Operculum forsan tubo calycis aequilongum; sutura adhuc occulta. Stamina ante expansionem infracta. Antheræ tantum in junioribus alabastris observatae, tum fere globosae, sed glandula terminalis tum magnum spatium occupans. Fructus 8–10‴ longi et vix minus lati brevissime et crasse pedicellati. Semina fertilia 1–1½‴ metientia, prominenter et subtus saepe radiate angulosa. Speciem hanc novam habeo proximam E. Luehmannianæ; caret autem colore ramulorum et innovationum albicante; consistentia foliorum est tenuior; venæ eorum angulo minus acuto patentes sunt, pedunculi paulo longiores et angustiores, alabastra saltem prima juventute non umbonata, fructus aliquoties majores ad orificium evidenter contracti, margo verticis abrupte descendens, loculi pauciores, semina majora."

Botanical Name.—*Eucalyptus*, already explained. (See Part II, p. 34.) *Planchoniana*, in honour of the late M. J. E. Planchon, formerly Director of the Botanic Garden of Montpellier, Southern France.

Following is Mueller's original dedication :—

> "Speciem dicavi amico J. E. Planchon, horti botanici Montis Pessulani digno Directori, qui tractatum de Eucalyptis eximium scripsit ('Revue des Deux-Mondes,' Janvier, 1875) et inter primos Eucalyptum Globulum ad mare mediterraneum e seminibus me transmissis culturae subjecit."—(*Fragm.*, xi, 43.)

Vernacular Name.—Because it is, when straight and large enough, cut up for Tallow-wood, it is known as Bastard Tallow-wood, when indeed it is not called Tallow-wood without any qualification.

It is sometimes called Stringybark.

Aboriginal Name.—I know of none.

Leaves.—When quite a young sapling the leaves of this tree are of a rich purple colour, giving it a decidedly ornamental appearance.

The fresh leaves yield ·06 per cent. of an essential oil, having a specific gravity of ·915 (Staiger).

The odour of this oil is described as peculiar, allied to citronella, but differing from it. It has been suggested as a soap-perfume.

Messrs. Baker and Smith (*Research on the Eucalypts*) report :—

Species.	Whence Collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[\alpha]_D$	Saponification Number.	Solubility in Alcohol.	Constituents found.
Planchoniana	Woodburn, N.S.W.	0·9039	Not taken.	7·1	1 vol. 80%	Phellandrene, sesquiterpene.

Fruit.—This tree bears the largest fruit of any of our New South Wales species of Eucalyptus, the shape of the fruit being ovoid, with raised longitudinal ribs. Mr. Forester Brown, of Port Macquarie, showed me a fruit of this species 1⅛ inch broad by 1 inch deep, when dried.

The ribbing of the fruits is omitted in Mueller's drawing in the "Eucalyptographia."

Bark.—Because of its fibrous bark it is locally known as a "Stringybark," but it is more like Red Mahogany. The bark is rough to the ultimate branchlets. It has otherwise been described as having a bark nearer to that of *E. robusta*, the "Swamp Mahogany."

Timber.—This timber is sound, heavy, hard, and durable, well adapted for sawing, but not easy to split, according to Bailey, speaking of Queensland timber.

When big enough, it is cut up at Woolgoolga, N.S.W., as Tallow-wood (*E. microcorys*). This will best give an idea of the appearance of the timber.

Exudations.—A small quantity of the kino of this species was examined by Maiden and Smith in *Contributions to a Knowledge of Australian Vegetable Exudations*, Part I, *Proc. Roy. Soc. N.S.W.*, xxix.

Size.—In the Brisbane district it attains a height of, perhaps, 100 feet and a diameter of (say) 3 feet (Bailey). The same dimensions were given in regard to trees near Kempsey, N.S.W. About Camden Haven the trees are poor and pipy; a solid one could not be found. Their height goes up to (say) 30 feet, with a diameter of 15 inches, but the trees are of stunted growth.

Habitat.—It is a coast species, and I am not aware that it has been recorded from further south than Camden Haven. It extends along the coast as far as Queensland.

Immediately opposite Laurieton, on the other side of the Camden Haven River, near the coast, are some trees of this, a rather rare species. It is here found over an area of about a mile, by half a mile broad.

Specific localities are:—Eight-mile Plains, near Brisbane (F. M. Bailey); Evans River, N.S.W. (W. Baeuerlen); Camden Haven (Forest Ranger G. R. Brown).

It has also been found in a more inland locality by Mr. E. C. Andrews, viz., Glen Elgin, about 30 miles north-easterly from Glen Innes, or about 20 miles easterly from Deepwater, and on the eastern watershed.

Mr. Andrews furnishes the following note:—

> "The more precise locality is Pheasant Creek, 18 miles N.N.E. from Glen Elgin.
>
> Occurs at an altitude of 3,000 feet on an extremely acid variety of granite. Very rocky and sandy country, almost indistinguishable from Hawkesbury Sandstone tops, around National Park and Hornsby.
>
> *Habit.*—Tall, upright, thin tops. Huge bunches of fruits, very noticeable from ground (50–70 feet below).
>
> *Associates.*—*E. corymbosa*, *E. pilularis*, Stringybark (species unknown), *Pimeleas*, *Styphelias*, *Boronias*, *Waratahs*, *Xanthorrhœas*, and various other sand-loving plants."

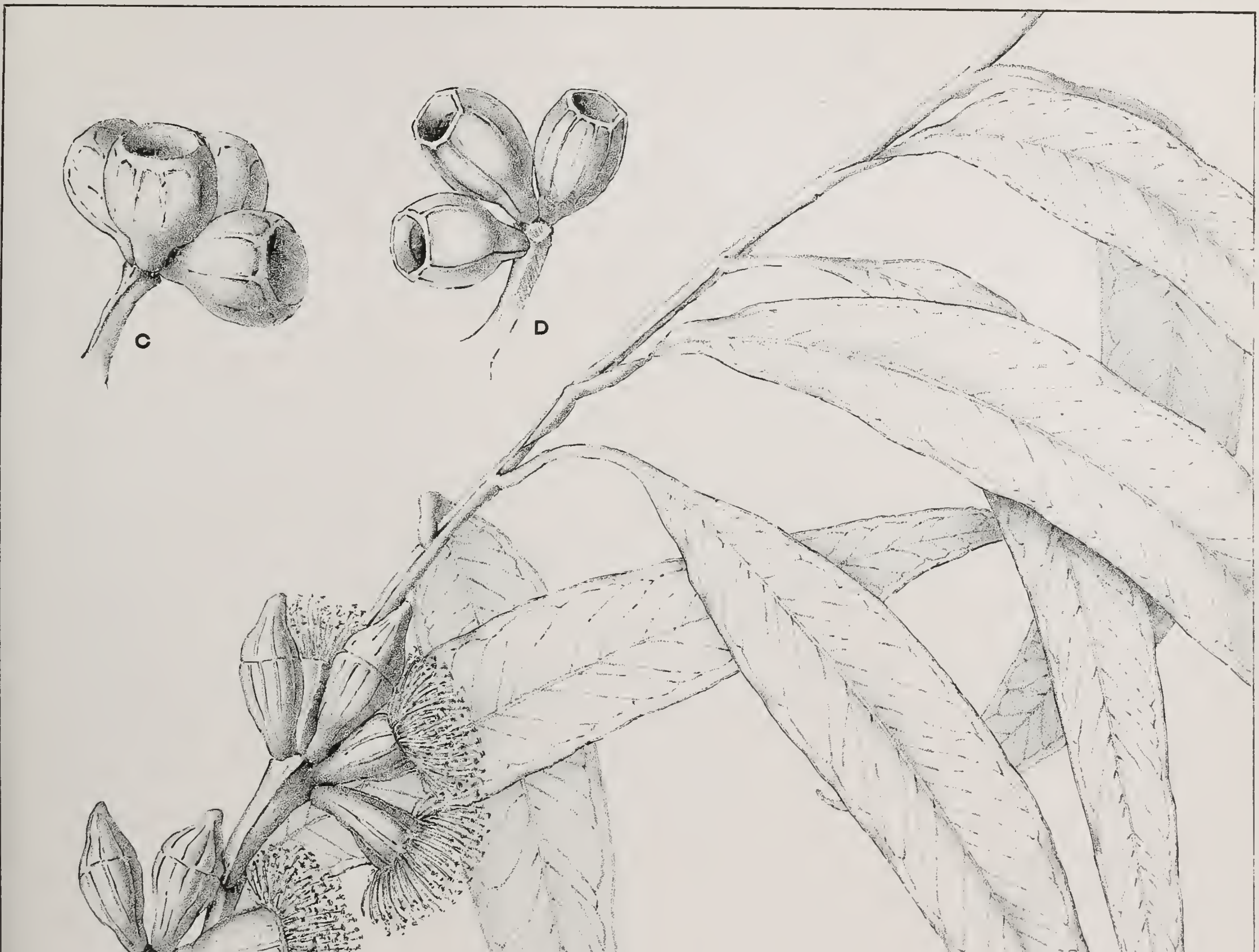
EXPLANATION OF PLATE 90.

A. Twig with flowers. From Laurieton, Camden Haven (G. R. Brown).

B. Fine large fruits from cliffs, Woolgoolga-road, Coast Range (E. H. F. Swain).

C. Smaller and more hemispherical fruits from Eight-mile Plain, near Brisbane (J. L. Boorman).

D. Fruits, not quite ripe and sub-cylindrical, from Laurieton.



BASTARD TALLOW-WOOD.

(*Eucalyptus Planchoniana*, F. v. M.)

No. 88.

Acacia penninervis, Sieb.

The Mountain Hickory.

(Family LEGUMINOSÆ: MIMOSÆ.)

Botanical description.—Genus, *Acacia*. (See Part XV, p. 103.)

Botanical description.—Species, *penninervis*, Sieb., in DC. *Prod.* ii, 452.

A tree attaining sometimes 40 feet (and may attain nearly twice this height), but usually smaller, glabrous in all its parts in the common variety, with angular branchlets.

Phyllodia from oblong to lanceolate falcate, more or less acuminate, usually 3 to 4 inches long, but sometimes twice that length, much narrowed towards the base, 1-nerved and more or less prominently and finely penni-veined, the margins usually nerve-like, and often but not always a short secondary nerve terminating in a marginal gland, much below the middle.

Racemes rather short but loose, with several small globular heads of about 20 flowers, mostly 5-merous.

Calyx truncate or shortly toothed, not half so long as the corolla.

Petals smooth.

Pod flat, straight, or curved, with slightly thickened margins, often 4 or 5 inches long, nearly ½ in. broad.

Seeds ovate, longitudinal; funicle long, dilated and coloured nearly from the base, extending round the seed and bent back on the same side, so as to encircle it in a double fold. (B.Fl. ii., 362.)

Under this name several forms are included, and I have recently been enabled to clear them up through the receipt of specimens of the types concerned from Kew. The typical form has often hardly falcate phyllodes, usually small, short, and often narrow, pale or yellowish green. The pods are often markedly reticulate. Most commonly a dry country shrub or small tree.

If we turn to Allan Cunningham's MS. Journal, under date 14th August, 1817, we find the entry:—

> "*Acacia impressa.*—A new sp. with leaves ovate oblong, veined, and one-glanded on the interior margin which is sunk deeply. Frequent on the rocky hills." (He was then approaching Bathurst from the west, in Oxley's Expedition.)

Then W. J. Hooker figured the plant as t. 2754 of the *Botanical Magazine*, the plate being dated 1st July, 1827. He called it "*A. penninervis*, the Feather-leaved Acacia" and gives "*Acacia impressa*, Hort." as a synonym.

Lindley also figured in the *Botanical Register*, t. 1115 as "*Acacia impressa*, the Bastard Sickle-leaved Acacia" and gives a description in Latin. His plate is dated 1st November, 1827. No synonymy is given.

It is also found figured at plate 1319 of Loddiges' *Botanical Cabinet.* The title-page is dated 1828; but doubtless the plates were executed about the same time as Hooker's and Lindley's plates. Loddiges say: "We raised many of this in 1822."

In all three works it is described as a shrub, and there is no reasonable doubt that the three plants figured were raised from seed furnished by Allan Cunningham at the same time, and bearing a name supplied by him.

Bentham quotes all three plates as synonyms of *A. penninervis.* The figures represent the same plant, that of the *Bot. Mag.* being the best. There is no doubt it is the dry-country shrubby form of *A. penninervis,*—the type, viz.:—

A. penninervis, Sieb., DC. *Prod.* ii, 452. (Sieber's pl. exs. No. 458.) The original description is in the *Prodromus,* and is dated 1825.

Then we have—

> "*A. penninervis* (Sieb. pl. exsic. nov. holl. no. 458) phyllodia oblong, acuminated at both ends, straight, with one longitudinal nerve in the middle, having feathered veins running from it, and furnished with one gland in front at the base. Native of New Holland. *A. impressa,* Cunningh. MSS. Lindl. Bot. Reg. 1115. Lodd. Bot. Cab. 1319. Hook. Bot. Mag. 2754. Phyllodia 2–3 inches long, and 5–6 lines broad, pale. The feathered veins rise from the base of the phyllodia, both in this and the preceding species (*A. spirolobus*), growing obliquely from the gland. Head of flowers about the size of a pea, racemose."—(*Hist. of Gard. and Bot.,* Don, vol. 2, p. 404.)

It will be seen that Don quotes *A. impressa,* A. Cunn., as a synonym, and also Lindley's figure in *Bot. Reg.,* and also Loddiges' in *Bot. Cab.,* and Hooker's in *Bot. Mag.*

Mr. R. T. Baker has inadvertently described it under the name var. *lanceolata* in the following passage:—

> "A tall shrub, branchlets thin, angular, phyllodia uniformly lanceolate, narrowed at both ends, secondary nerve very indistinct; always narrower than in var. 1 (normalis). Pod much lighter in colour than any of the other forms, about ½ in. broad and 6 to 9 in. long."—("Botany of the Rylstone and Goulburn River Districts."—*Proc. Linn. Soc. N.S.W.,* xxi [1896], p. 441.)

Having thus ascertained what is the true *Acacia penninervis,* we now come to that form of it which is known as the Tanning Wattle or Hickory. It is that form of the species which has the greatest economic value.

It was first described by A. de Candolle, in 1825, in the following words, translated by Don:—

> "*A falciformis* (DC. *Prod.* 2, page 452) phyllodia oblong, falcate, *much attenuated at the base,* but bluntish at the apex, with a longitudinal nerve in the middle, as well as being finely feather-nerved, bearing one gland in front on the upper margin. H. G. Native of New Holland. (Sieb. pl. exsic. nov. holl. no. 616.) Phyllodia 5–6 inches long and 8–9 lines broad. Heads of flowers racemose. Legume stipitate, flat, rather glaucous, 2 inches long, and 8–10 lines broad. Shrub 4–8 ft.—(*History of Gardening and Botany,* Don, vol. 2, p. 404)."

Then Allan Cunningham described the Tanning Wattle as *A. astringens,* but speaks of it as a shrub of 6–10 feet with glaucous phyllodia. The sizes of plants as given by the early botanists frequently require modification as additional data are obtained. I have seen the Tanning Wattle of the size stated, and also with glaucous phyllodes.

Following is Cunningham's description :—

"*A. astringens* (Cunningham MSS.) phyllodia glaucescent, broad, obliquely ovate-oblong, obtuse, somewhat arcuate and marginated, feather-nerved, smooth, furnished with one gland on the upper margin at the base; heads of flowers racemose. H. G. Native of New South Wales. Phyllodia, 3–4 inches long and 1 inch broad."

Astringent Acacia. Shrub, 6–10 feet.—(*Hist. Gard. and Bot.*, Don, vol. 2, p. 405).

Mr. R. T. Baker has re-described this as a variety *glauca* of *A. penninervis* in the following words :—

"A shrub of a few feet in height, branchlets red, terete, much stouter than in other varieties. Phyllodes broadly obtuse, glaucous, coriaceous, central nerve and margins very prominent, the gland rarely present, 3 to 5 inches long, 1 to 2 inches broad. Pod thickly coriaceous, 2 to 4 inches long, under 1 inch broad. Seed mostly orbicular."—("Botany of Rylstone and Goulburn River Districts."—*Proc. Linn. Soc. N.S.W.*, xxi [1896], p. 441.)

Bentham (B.Fl. ii, 362) founded a variety *falciformis* of *A. penninervis*. Following are his words :—

"Var. *falciformis.*

Phyllodia usually longer and more falcate, young shoots and inflorescence minutely hoary or golden-pubescent.

Pod nearly ¾ inch broad.

A. falciformis, DC. Prod. ii, 452; *A. astringens*, A. Cunn. in G. Don. Gen. Syst. ii, 405.

From Twofold Bay (F. Mueller), to Moreton Bay (Leichhardt), and New England (C. Stuart); and from the Blue Mountains (Sieber, n. 616, and others) to the Lachlan River (A. Cunningham, Fraser). Called *Blackwood* by the western colonists, and the bark used for tanning."

This form has broad, coarse phyllodes, is commonly a big tree, is a well-known Tanning Wattle, and is commonly called Hickory or Mountain Hickory.

It is the tree described as follows by Mr. R. T. Baker as *A. penninervis*, var. *normalis*, a view I shared until receipt of the types from Kew :—

Var. *normalis.* Phyllodia lanceolate-falcate, obtuse or acuminate, thinly coriaceous, 3 to 5 inches long and 1 inch broad, 1-nerved and prominently penninerved, the margins nerve-like, and almost always with a short secondary nerve terminating in a gland a short distance from the base. Pod several inches long and 1 in. broad, firm, margins parallel, often glaucous. A tree up to 60 or 70 feet high. It is the bark of this tree that is highly prized for tanning."—("Botany of Rylstone and Goulburn River Districts."—*Proc. Linn. Soc. N.S.W.*, xxi [1896], p. 441.)

Then we have a narrow-leaved form, which I described as follows at p. 49 of my "Wattles and Wattle-barks," 3rd Edition, 1906 :—

"Var. *angustifolia*, Maiden. A long narrow-phyllode form, found only on the South Coast, so far as I know. Phyllodes commonly 6 inches long and under half an inch wide, straight or slightly falcate. The pods are narrower than in the normal form. The young shoots and the rhachises of the inflorescence are sometimes densely covered with golden yellow hairs."

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *penninervis*, from two Latin words, *penna*, a feather; *nervus*, a nerve, or, in botany, "a vein." So that penninerved means that the phyllodes ("leaves") have their venation arranged after the fashion of a pinnae of a feather.

Vernacular Names.—Usually called "Hickory," or "Mountain Hickory." Occasionally called "Black Wattle," *e.g.*, Blue Mountains.

Unfortunately there are several so-called Hickories in this State, and, therefore, care is necessary to indicate the right one. That Hickory which looks like a pepper-tree, and which is found on the banks of watercourses and in gullies in the Blue Mountains, and also at Picton, Bargo, Mittagong, and other places in the Southern districts, is *Acacia elata.* Most of our Hickories (and *Acacia penninervis* is no exception), however, are phyllodinous. Amongst those which are known as Hickory in different places, are *Acacia binervata* (one of the Black Wattles), and even the Blackwood (*Acacia melanoxylon*) and the closely-allied *Acacia implexa.*

Aboriginal Name.—I know of none which can be recognised with certainty.

Synonyms.—I have already explained the unfortunate confusion which has arisen in regard to this species. To recapitulate, we have :—

1. *Acacia penninervis,* Sieb.
    - (a) *A. impressa,* Lindl. *Bot. Reg.* t. 1115, and Lodd. *Bot. Cab.* t. 1319, based on A. Cunn. MSS.
    - (b) *A. penninervis,* Sieb , var. *lanceolata,* R. T. Baker.
2. Variety *falciformis,* Benth. (the Tanning Wattle).
    - (a) *A. falciformis,* DC.
    - (b) *A. astringens,* A. Cunn.
    - (c) *A. penninervis,* vars. *normalis* and *glauca,* R. T. Baker.
3. Variety *angustifolia,* Maiden.

Leaves.—It is worthy of note that in some districts in which Mountain Hickory occurs the bark has never been stripped and tried, for the reason that people do not look upon it as a Wattle, imagining it to be a Gum-tree because of the appearance of its leaves (phyllodes)! This state of things is passing away, as the bark is now becoming appreciated in certain quarters, to my personal knowledge, and it is only another instance of the unknown wealth waiting to be known, and therefore utilised.

My readers will observe from the plates how variable in size and contour are the leaves (phyllodia) of the Mountain Hickory. It is, in fact, a very variable species, but it may be usually known by means of the thickened dot or gland which is found a little distance along the rim (or marginal vein) of the leaf, and from which another vein extends, in a curved manner, to the leaf-stalk. A small leaf-shaped enclosure, varying in size, is thus partitioned off out of the area of the leaf itself.

A specimen, from near Moruya, has very narrow leaves (variety *angustifolia*) varying in breadth from a quarter to half an inch, and from 8 inches to 12 inches in length. Another, from Mount Dromedary, has its leaves 8 inches long and 2¼ inches broad. The average size, however, may be given as 5 inches long and 1 inch broad. This will explain why different trees are known as narrow-leaved and broad-leaved Mountain Hickory respectively.

Fruit.—In *A. penninervis* the funicle extends sometimes unilaterally, sometimes bilaterally (Mueller, in *Proc. Linn. Soc. N.S.W.*, 1890).

Bark.—The greater amount of wattle-bark used by Australian tanners, or exported from our shores, is the produce of two species of Acacia—namely, *Acacia decurrens* (and its varieties) and *Acacia pycnantha.* There is another Wattle of surpassing excellence, that of *Acacia penninervis*, variety *falciformis*, worthy to be mentioned in comparison with these two. Some years ago I examined a wattle-bark from the extreme south of this State, quite different in appearance from the smooth barks which are usually associated in Australia with high percentage of tannin. To my surprise, I found it to contain 34 per cent. of tannic acid. I repeated the experiments with fresh samples, but the results never varied 1 per cent. altogether. In other words, this bark contains one-third of its weight of tannic acid, calculated on the dry bark. Many communications have reached me, particularly from Queensland, in regard to this matter, and the subject is of great commercial importance to our State.

I proceed to give a number of analyses of representative samples of this bark from different places in New South Wales. I have already alluded to one bark which gave 34 per cent. of tannic acid; it also yielded 55·2 per cent. of extract, and came from Brown's Camp, near Delegate. I have not come across a finer sample of this bark, though there is much of equal quality. The mature trees which yielded this excellent result must have each contained half a ton of bark.

Bark from Mount Dromedary, stripped in December, gave 32·25 per cent. of tannic acid and 53·15 of extract. A sample grown at Mount Victoria (Blue Mountains), stripped in June, gave 29·03 per cent. of tannic acid and 57·25 per cent. of extract. Height of the tree, 40 feet; diameter of stem, 6 inches. Bark from Rylstone (Mudgee Line), stripped in December from young (immature) trees, yielded 25·25 per cent. of tannic acid and 42·45 per cent. of extract. All the above are from the "broad-leaved" or typical kind.

The following are "narrow-leaved" (variety *angustifolia*). Bark from Nelligen, stripped in December, gave 32·25 per cent. of tannic acid and 52·8 per cent. of extract; while a specimen from the Dromedary, much further south, gave an almost identical result, viz., 32 per cent. of tannic acid and 52·7 per cent. of extract.

The following analysis was given by the Queensland Commissioners, Colonial and Indian Exhibition, 1886:—Tannic acid, 14·49 per cent.; extract, 33·06 per cent. I have received a Queensland sample from Dr. T. L. Bancroft, of Brisbane, who obtained it from Enoggera. It was from trees 15 feet in height and 6 inches in diameter, was collected in May and analysed in July. It gave 18·24 per cent. of tannic acid and 35·95 of extract; but the bark is too thin, and it gives too dark-coloured a liquor for it to be looked upon very favourably.

Both of these Queensland analyses probably refer to the normal species.

Mueller stated the bark of this tree yields material which can be worked up into the coarser kinds of paper. Many other species of *Acacia* yield a bark similar in this respect, but it is poor paper material.

Timber.—This wood does not appear to have come into general use; but an expert in the Bombala district considers it excellent, being very durable and very tough, on which account he prefers it to anything else for axe and tool handles. It is said that the timber can almost be bent double upon itself. Trees obtained from high, stony ridges are usually sound, and not attacked by grubs. The above remarks apply to those grown in such a situation.

Timber examined by me was flesh-coloured, very little sap-wood, and a good, tough timber. Nevertheless, it is inferior to other timbers abundantly available in the places in which it grows.

Exudations.—Lauterer * gives an analysis.

Size.—The typical form is usually a shrub or small tree. The variety *falciformis*, on the eastern mountain slope and ranges, attains a good height (20 to 40 feet), with a diameter up to 18 inches. Trees a foot in diameter are common. It is found a good size along the strip of forest land fringing the plains of the Monaro. The largest trees appear to occur in the mountain ranges, near Delegate, which form the southern boundary of the Monaro, where, for instance, near Brown's Camp (the locality from which I first obtained the samples which enabled me to draw attention to the extraordinary value of this bark), the trees attain a height of from 40 feet to 80 feet, and a diameter up to 2½ feet, while trees of a diameter of 18 inches to 24 inches are not scarce in the locality.

Habitat.—Following are the localities given in the "Flora Australiensis":—

QUEENSLAND.

Brisbane River, Moreton Bay (Fraser, F. Mueller); sandstone ridges, near Mount Pluto (Mitchell).

NEW SOUTH WALES.

Blue Mountains (Sieber n. 458 and others), and inland to the Macquarie (A. Cunningham, Fraser); northward to Hastings River (Beckler); and southward to Twofold Bay (F. Mueller).

VICTORIA.

Granitic ranges and mountains on the Broken, Ovens, and Snowy Rivers (F. Mueller).

TASMANIA.

Brown's Road, Mount Wellington (Oldfield).

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* "Gums and Resins exuded by Queensland Plants chemically and technologically described."—(From pages 35 to 80 of F. M. Bailey's *Botany Bulletin* No. xiii [April, 1896], "Contributions to the Queensland Flora.")

Following are some New South Wales localities represented in the National Herbarium, Sydney, for the normal form:—

Shrubs of 3 and 4 feet.—Foot of Big Jack Mountain, Bombala district; "Black Wattle," Weddin, Grenfell, and county of Ashburnham generally.

Rylstone district; Cow Flat, 11 miles south of Bathurst; Parkes Water Supply; Bushrangers' Rocks, Eugowra; Wellington; Minore, Dubbo; Harvey Ranges.

Tamworth; Tingha; Moona Plains, Walcha; Howell, Warialda, and Emmaville. Phyllodes very attenuate at the base in these two localities.

It is a small tree about Brisbane.

Now we come to the variety *falciformis*, the tree which is of such importance for its tanning bark.

As regards the occurrence of the Mountain Hickory in Victoria, Baron von Mueller speaks of it as scattered through the eastern half of the State, over ridges and ranges, gregarious on some of the sub-alpine declivities and plateaux.

New South Wales seems to be the natural home of the tree. In our State it extends from south to north, in the eastern half, on the southern ranges, the Dividing Range and its spurs, and the New England district.

While this species is so abundant and so extensively distributed, it would appear that only bark from the colder parts of New South Wales is of any great commercial value, and I therefore give particulars of such localities in a little more detail.

It is found from the Clyde and Bateman's Bay district, all along the coast land, right down south to the boundary of Victoria.

Nelligen, Moruya, Araluen, Tilba, Cobargo, Colombo, Bega, Candelo, Bombala, Delegate, and the Twofold Bay district are good localities.

It is less common in New England, but employed in the Mudgee, Tamworth, and other districts for tanning.

The following notes from a southern correspondent, who forwarded me some barks, include some additional localities:—

"No. 1. Local name Hickory or Black-wattle, taken from a tree 40 feet in height, 16 inches in diameter, growing plentifully on ridges and high lands in the parishes of Wagonga, Noorooma, Tilba, Bodalla, and neighbourhood, county of Dampier, for miles round the base of Mount Dromedary; soil generally light on slate formation.

"No. 2. Local name Broad-leaved Hickory, though not so plentiful as No. 1, yet in abundance, more particularly about Milton, Bermagui, Tilba Tilba, Reedy

Creek, Cobargo, and along Tuross River. It is not uncommon to see trees 2 feet in diameter; that from which No. 2 specimen was taken measured 20 feet in height and 12 inches in diameter."

If possible, no tree under a foot in diameter should be stripped; immature trees give little bark, which contains comparatively little tannic acid. To strip Mountain Hickory saplings is simply killing the goose with the golden eggs. It is not surprising that so large a tree yields rather a thick bark. A certain specimen is over five-eighths of an inch thick, is rugged, something like an ironbark, only more stringy.

Some of the localities represented in the National Herbarium, Sydney, are as follows:—

VICTORIA.

Mount St. Bernard and Mount Hotham, both in the Victorian Alps.

NEW SOUTH WALES.

Southern Localities.—Thredbo River and Mount Kosciusko up to 5,500 feet; Mount Imlay, Twofold Bay, and Eden to Pambula; Nimitybelle to Tantawanglo Mountain; Barber's Creek; Hill Top; Menangle.

Western Localities.—Mount Victoria; abundant, Mount Victoria to Jenolan Caves; Bowenfels Churchyard, a tree 2 feet in diameter; Jenolan Caves; Sunny Corner; Rylstone district and Bylong Creek; sometimes called "Tanning Gum" in Bathurst district. The phyllodes are looked upon as "gum leaves."

Northern Localities.—Near Copeland.

"Hickory it is always called in New England.

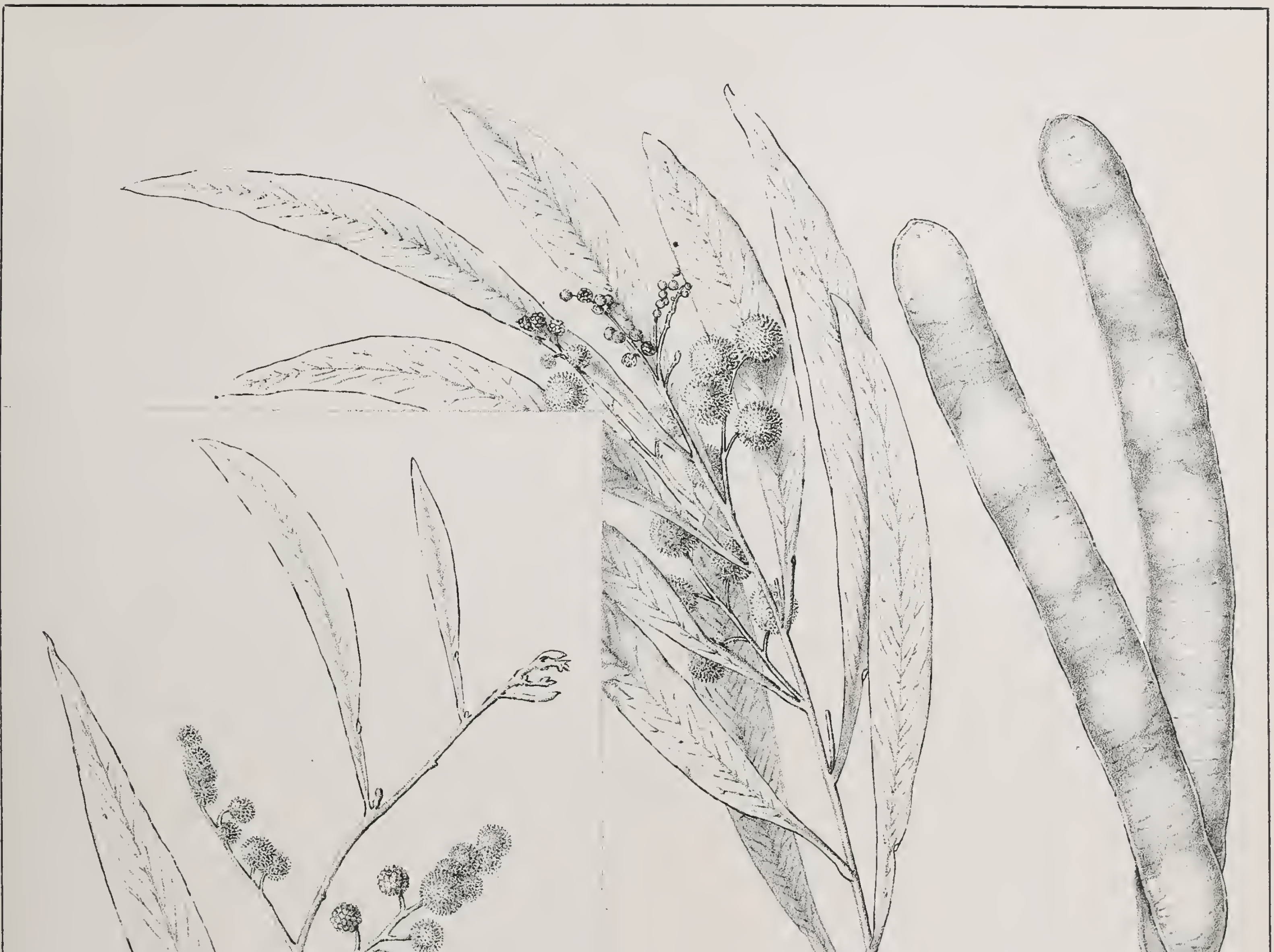
"I have stripped trees over 2 feet in diameter, and 50 feet of bark, and weighing over 8 cwt.

"It also grows on the main Liverpool Range.

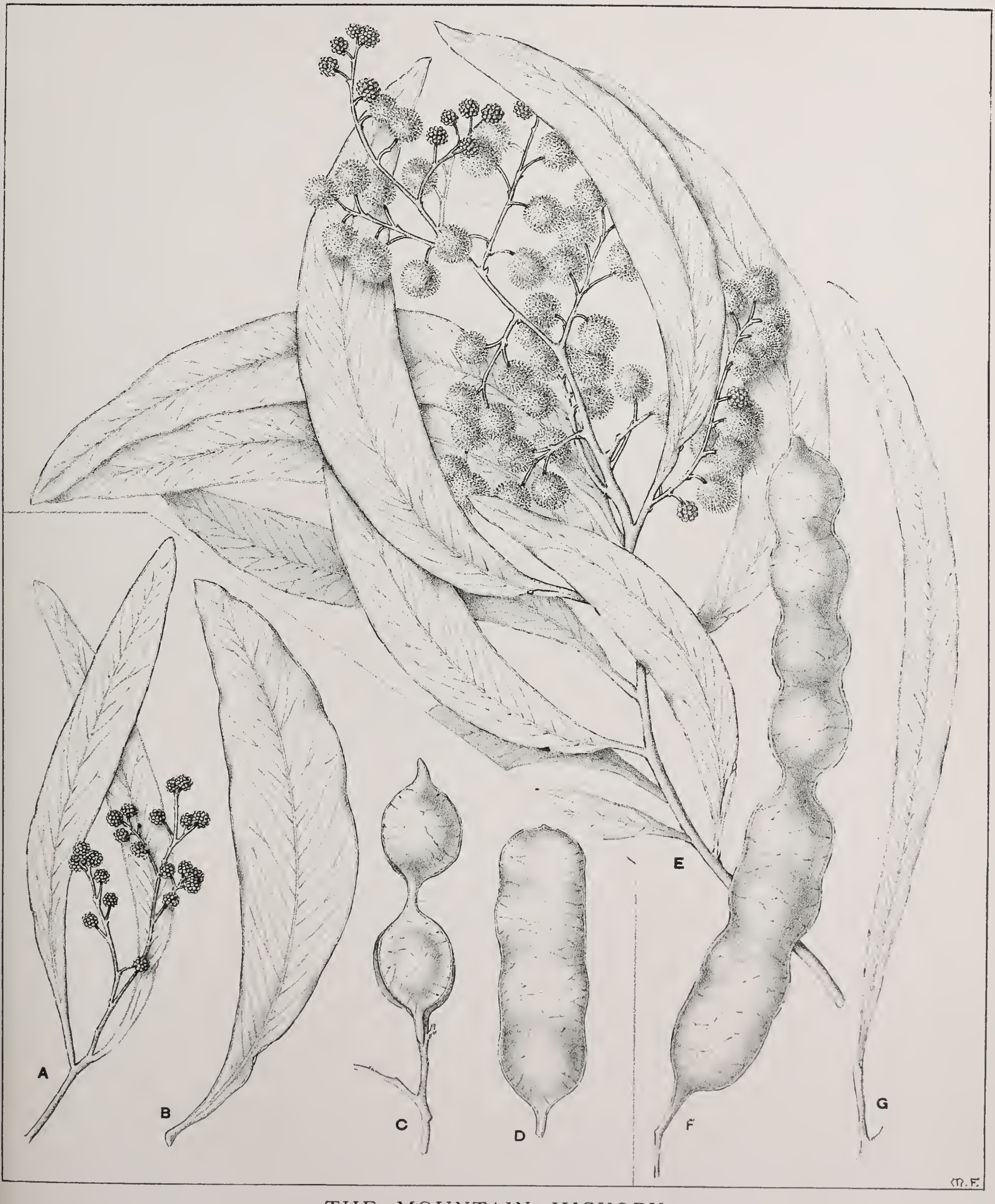
"The trees from which we get the bark grow mostly on spurs off the main range both east and west. I have seen the same kind of bark used in Bathurst, and which I was told was got from towards Mudgee. We have been using the bark twenty-three years, and like it for dressing leather better than any other.

"As I told you, the tree blossoms early in November."—W. J. Smith (The Tannery, Tamworth).

"The Broad-leaved Hickory grows all over this (Glen Innes) and Tenterfield districts, but very scattered with few exceptions, those being principally on Pastoral Holdings Rivertree, Koreelah, Oakwood, Morven, and Sandy Hills. Although it is stripped when in full blossom, it retains enough sap in the limbs for the seeds to properly ripen" (Forester Powell). Mount Mitchell, 5,000 feet; a New England locality marked var. *falciformis*, by Bentham. Guy Fawkes and Round Mountain.

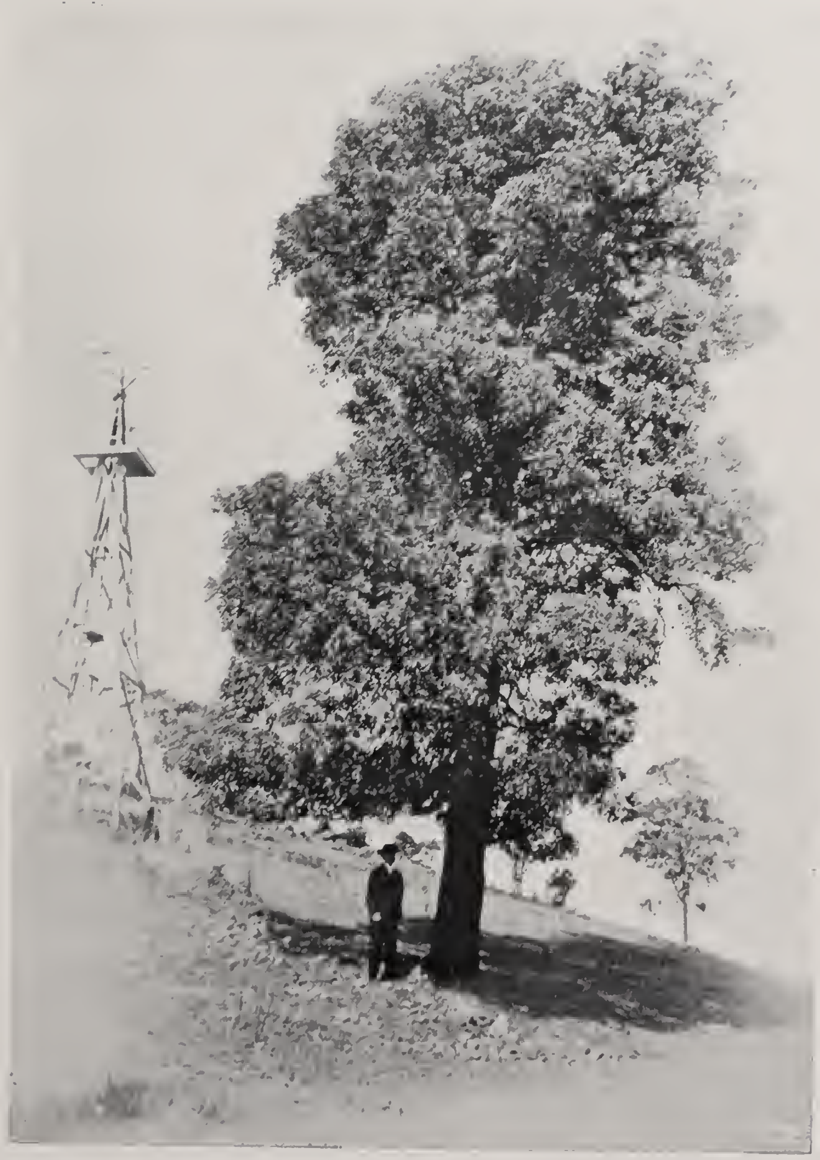


THE MOUNTAIN HICKORY.
(*Acacia penninervis*, Sieb)



THE MOUNTAIN HICKORY.

(*Acacia penninervis*, Sieb.: *var. falciformis*, Benth., *except G*).



Acacia penninervis, VAR. *falciformis.*

Forming dense belts of a scrubby growth up to 8 or 10 feet high in various localities about Guy Fawkes, and up to within a very few feet of the very top of the Round Mountain. Young shoots and inflorescence minutely hoary or golden-pubescent, phyllodia falcate, but rather small at the highest elevations.

Tenterfield to Sandy Flat.

Mr. R. T. Baker gives the following localities for his variety *glauca*:—Murrumbo; Bylong Creek; Gulf Road; Church Mount, Reed Creek, Rylstone, all in the Rylstone district; and Cobar in the interior of N.S.W.

As already stated, I am unable to separate this variety from the ordinary form of Tanning Wattle, which is sometimes very glaucous and stunted—matters dependent on climate and locality.

Variety *angustifolia*, Maiden. Black Wattle, up to 30 feet, Milton; Conjola; Bateman's Bay; Mogo, near Moruya.

Fungus Pests.—Mr. McAlpine says that this species is attacked by the fungus *Uromyces phyllodiorum* (B. and Br.), McAlp.

EXPLANATION OF PLATE 91.

Acacia penninervis, Sieb.

A. Flowering spray from type—ex Herb. Hort. Bot. Reg. Kew.
B. Flowering branch, Rylstone district.
C. Flower-head.
D. An individual bud.
E. Flower.
F. Flower opened out showing—
    (*a*) Calyx.
    (*b*) Corolla.
    (*c*) Stamens.
    (*d*) Pistil.
G. Anthers.
H. Bract.
K. Ripe pods.

EXPLANATION OF PLATE 92.

Acacia penninervis, Sieb. var. *falciformis*, Benth.

(The Tanning Form of the Species.)

A. Twig.
B. Leaf.
C. } Pods.
D. }
} From type specimen of *A. astringens*, A. Cunn. From the Blue Mountains.
E. Flowering branch from Jenolan Caves.
F. Pod.
G. *A. penninervis*, var. *angustifolia*, Maiden, Conjola, near Milton, showing the narrow "leaf" (phyllode).

Photograph of *Acacia penninervis*, var. *falciformis*, Bowral, N.S.W. (R. H. Cambage, photo).

Sydney: William Applegate Gullick, Government Printer.—1907.

Volume II (Parts XI–XX).

Part XI (issued September, 1904).

No. 39—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

Part XII (issued November, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

Part XIII (issued November, 1904).

No. 52.—The Mugga ; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
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THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 5.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,

Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXV.

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No. 89.

Dysoxylon Fraseranum, Benth.

The Rosewood.

ALSO

D. pachyphyllum, Hemsl.

The Apple-tree of Lord Howe Island.

(Family MELIACEÆ.)

In Part XXIII I have defined the Rosewood, partly with reference to the confusion hitherto existing between *D. Fraseranum* and *D. Lessertianum*, which were supposed to be distinct species. I shall not repeat myself at this place.

In the year 1830 Adrien de Jussieu described a New South Wales tree under the name *Hartighsea Fraserana.* The specimens had been given to Gaudichaud, botanist on board the French warship "Astrolabe," by Charles Fraser, Superintendent of the Botanic Gardens, Sydney, in 1827.

Following is the original description :—

> *Hartighsea Fraserana.*—H. foliis abruptè pinnatis; foliolis suboppositis, 2–4-jugis, lanceolatis obtusiusculis, nervis secundariis, subtùs ad basim in perulam dilatatis, paniculis racemiformibus, laxifloris; petalis 4 cum tubo stamineo infernè coalitis; ovario 3-loculari.
>
> *Rami* novelli pube brevissimâ pulverulenti, adulti glabrati. *Folia* abruptè pinnata, 2–4-juga, foliolis suboppositis, lanceolatis, poll. 2–3 longis et 1 latis (infimis, brevioribus), obtusiusculis, glaberrimis, suprà lucidis, subtùs reticulato-nervosis origine nervorum secundariorum sæpe mirè inflatâ et perulam intùs hispidam constituente, subsessilibus: petioli poll. 5–3 longi, subpatuli, pulverulenti glabrative, suprà complanati. *Paniculæ* racemiformes, foliis duplo breviores, pedunculis pube brevissimâ tectis, communibus gracilibus a basi ramosis, partialibus patentibus bracteatis; pedicelli brevissimi, glabelli. *Calyx* 1.1 longus, cupulæformis, breviter et obtusè 4-lobus, pilulis raris extrorsùm puberulus. *Petala* 4 calyce triplo longiora, lineari-lanceolata, dimidiâ parte inferiori arcte cum tubo connata, superiori libera et reflexa, vix puberula. *Tubus* stamineus similiter puberulus, apice 8-fidus laciniis semi-ellipticis, introrsùm inter ipsas 8-antherifer, antheris cordato-ovatis. *Tubulus* ovarium æquans, striatus, crenulatus, glaber (nisi introrsùm ad basim ubi pili rari molles). *Stylus* tubo subæqualis, glaber. *Stigma* ipso latius, discolor, discoideum, supra umbilicatum. *Ovarium* conoideum, hirsutum, 5 loculare loculis infra tubi staminei insertionem descendentibus, 2-ovulatis: ovula ex anguli interni basi ascendentia. Fructus.—Diversæ floris partis massulis resinosis extùs conspicuis granulosis vermicularibusve farctæ. Partium numerus rariùs quinarius.
>
> Hab. in Novâ Hollandiâ orientali. v. s. s. in herb. Mus. communicatum a Cl. Fraser retulerat Cl. Gaudichaud. (*Mem. Mus. Paris*, xix, p. 262.)

A translation is appended, and this is really the description of the type of *Dysoxylon Fraseranum* :—

Leaves abruptly pinnate.

Leaflets irregularly opposite, in 2 to 4 pairs, lanceolate, rather obtuse, the secondary nerves enlarged at the base into little pockets.

Panicles raceme-like, loose-flowered.

Petals, 4, united with the staminal-tube below.

Ovarium, 3-celled.

Young branches pubescent with a short indument, the adult ones glabrous.

Leaves abruptly pinnate, with 2 to 4 pairs of the leaflets.

Leaflets irregularly opposite, 2 to 3 inches long and 1 inch broad (the lowest shorter), rather obtuse, glabrous, shining above, reticulate-nerved below, the origin of the secondary nerves often extraordinarily inflated forming little pockets hispid inside (these are the *domatia* of the present day—see p. 83.—J.H.M.), nearly sessile.

Petioles 5 to 3 inches long, somewhat spreading, pulverulent or glabrous, flattened above.

Panicles raceme-like, half as long as the leaves, the peduncles covered with short soft hairs, the common axis slender, branched at the base, the partial ones spreading, bracteate ; pedicels very short, glabrous.

Calyx 1 line long (?), cup-shaped, shortly and obtusely 4-lobed, sparingly hairy and puberulous outside.

Petals 4, three times as long as the calyx, linear-lanceolate, the lower half connate with the tube, the upper half free and reflexed, hardly puberulous.

Staminal tube similarly puberulous, 8-toothed at the apex, teeth semi-elliptical, inside bearing the 8 cordate-ovate anthers.

Tubular disc as long as the ovarium, striate, crenulate, glabrous (unless inside at the base with a few soft hairs).

Style about as long as the tube, glabrous.

Stigma about as broad as long, discoid, umbilicate above.

Ovarium, cone-shaped, hirsute, 5-celled, the cells descending below the insertion of the staminal-tube, 2-ovuled ; ovules ascending.

Fruits—(apparently not known.—J.H.M.).

Various parts of the flower with resinous lumps, and outside packed with minute granular and vermicular-shaped masses.

The number of the parts rarely five. Hab. in Eastern Australia.

In Paris Museum, from M. Gaudichaud, to whom it was given by Mr. Fraser.

Bentham properly referred this *Hartighsea* of A. de Juss. to the *Dysoxylon* of Blume, and redescribed the tree as *D. Fraseranum*, as shown in Part XXIII of the present work. I will not repeat that description.

Bentham's type specimen is "Hastings River, Fraser," the same as that of A. de Jussieu.

Bentham also quotes "Woods of Paris Exhibition, n. 238, Macarthur" (B.Fl. i, 331). This is "Specimens of woods indigenous to the southern districts" (Catal. of the Natural and Industrial Products of N.S.W. for the Paris Exhibition. Sydney, Nov., 1854). Collected by Mr. (afterwards Sir) William Macarthur:—

> No. 238. Rosewood, diameter 36–72 inches, height 80–120 feet. A beautiful tree, producing the finest timber, both durable and ornamental. It possesses an agreeable fragrance, the effect of an essential oil. Bedsteads of this wood never harbour insects.

Although this purports to be a list of "southern" timbers, we have a footnote—"Rosewood, name at Brisbane Water, Hunter River, &c."

This description can only refer to one tree—the well-known Rosewood of eastern New South Wales.

There is a specimen in Fraser's handwriting in the National Herbarium, Sydney (received from the Herbarium of the University of Oxford), labelled "A secondary tree, flowers white, native of the banks of the Hastings." It is a co-type of *D. Fraseranum.*

Mr. W. B. Hemsley, in a letter to me (quoted below), says:—

> "Besides Fraser's specimen, we have 'Sydney Woods, Paris Exhibition, 238. W. Macarthur, 1854, 80–120 feet. Red. Cabinets made of the [wood]. Sawdust blisters the skin.' This is probably the same species, as also R. Brown's 5,227, distributed as *D. Lessertianum.*"

Mueller (Fragm. ix, 61) makes the following statement:—

> Dysoxylon Lessertianum ad flumen Paterson's River altitudinem 60′ attinet, monente Carron. Foliola saturate viridia. Hanc aut similem speciem in tractu Blue Mountains reperit L. Calvert.
>
> Dysoxylon Fraseranum ad flumen Richmond River (Maria Hodgkinson).

As regards Queensland, Mr. F. M. Bailey has recorded the species (Queensland Flora, i, 230) as "Southern Ranges"; but, in reply to a letter from me, he states that he has not seen an authentic specimen of *D. Fraseranum.*

Anxious to learn more of the true *D. Fraseranum,* I wrote the Director of Kew as follows:—

> In Hemsley's "Flora of Lord Howe Island" (*Annals of Botany,* x, 234), it is stated that *Dysoxylon Fraseranum* is found in N.S.W. and Queensland. If there are any specimens at Kew, I shall be glad to be informed on what authority that statement has been made. I want to get *definite* N.S.W. and Queensland localities for the species, which I have never found on the mainland.* I do not say it is not there. I shall be glad if specimens of the species from any mainland localities can be spared. (10th July, 1906.)

To which I obtained the following reply, which I quote, only omitting a passage already quoted:—

> Your question whether *Dysoxylon Fraseranum* is found in N. S. Wales puzzles me, because you record it in your own books, and it was described from specimens collected by C. Fraser, on the Hastings River, according to a labelled specimen in the Kew Herbarium. After a more critical examination of Fraser's plant, and the material we have from Lord Howe Island, I am of opinion that they are different species, but I have not completed my analyses.—(W. B. Hemsley, 16th August, 1906.)

---

* At this time I endeavoured to believe that Bentham and Mueller were correct in keeping *D. Fraseranum* and *D. Lessertianum* distinct. I looked upon the latter species as the common Rosewood, and I thought that since the Lord Howe Island tree was reputed to be *D. Fraseranum,* it was possible that the species might be confined to the island and that there might be some mistake in regard to the reputed mainland localities.

The Lord Howe Island tree is Dysoxylon pachyphyllum, Hemsley, (and not D. Fraseranum, Benth.)—The very same day (16th August, 1906) Mr. Hemsley addressed me a second letter:—

> I have now no doubt that the Lord Howe Island *Dysoxylon* is a distinct species,—quæ a speciebus hujus affinitatis foliolis crassis coriaceis obovato-oblongis apice obtusis—simis vel rotundatis, floribus, minoribus, staminum tubo ultra medium partito et stigmate late peltato differt. I have named it *D. pachyphyllum*, and a description will appear in the next part of the *Kew Bulletin*.

The official description is not available at the time of our going to press (May, 1907). When it comes it will be published in a subsequent Part.

So that another difficulty which had gathered around *D. Fraseranum* has been cleared up. The Lord Howe Island tree hitherto referred to that species is a new one (*D. pachyphyllum*, Hemsley), while *D. Fraseranum* is confined to the mainland.

Mueller, under *D. Fraseranum*, wrote thus of the Lord Howe Island tree:—

> . . . . . . "et in insula Lord Howe's Island (Fullagar) crescit. Foliola pallide viridia; terminale sæpe absens. Panicula fere racemosa. Tubus staminum extus pilosulus. Fructus circiter uncialis, passim sesquiuncialis, globosus vel fere pyriformis, pæne glaber, tardissime dehiscens. Pericarpium crustaceum, haud lignescens. Semina usque 4 maturantia, trigono-ovata, $\frac{1}{2}$–$\frac{2}{3}''$ longa, ample arillata."—(*Fragm.* ix, 61.)

The reference to *D. Fraseranum* being found in Lord Howe Island is repeated by Mueller in *Fragm.* ix, 77.

Then Hemsley (*Annals of Botany*, x, 234, 1896) accepted Mueller's statement.

After my visit to the Island, I wrote the following note under *D. Fraseranum*:—

> "Apple-tree" rather plentiful, but does not come below 1,000 feet, and hence is not used. Its diameter is from 1 foot to 2 ft. 6 in.—(*Proc. Linn. Soc. N.S.W.*, 1898, p. 124.)

My own observations, made a year ago, on the differences between (1) the Lord Howe Island plant, the type of *D. pachyphyllum*, and (2) Fraser's plant, the type of *D. Fraseranum*, are very trifling as regards the flowers:—

(*a*) Petals only hairy at the tips in (2), hairy from the base in (1).

(*b*) Anthers at least as long as the teeth of the staminal-tube in (2), and some of the teeth are distinctly bifid, while in (1) the anthers are shorter than the teeth of the staminal-tube.

(*c*) The stigma is smaller in (2) than in (1).

We will now leave *D. pachyphyllum*, and renew consideration of *D. Fraseranum*.

Botanical Name.—*Dysoxylon*, already explained (see Part XXIII, p. 30); *Fraseranum*, already explained.

Vernacular Name.—Already dealt with at Part XXIII, p. 31.

Aboriginal Name.—Already dealt with at Part XXIII, p. 31.

Synonym.—*Hartighsea Fraserana*, A. Juss. in Mem. Mus. Par., xix, 262, t. 15.

Leaves.—If we turn to the original description of this tree (above, p. 79) we find these words: "mire inflata et perulam intus hispidam constituente," which refers to what are now called "domatia,"—the origin of the secondary nerves often extraordinarily inflated, forming a little pocket, hispid inside.

Bentham refers to the same thing:—"Leaflets . . . . bearing occasionally tufts of hairs in the axils of the principal veins underneath." (B.Fl. i, 381.)

Domatia are not always present, nor are they shown in Plate 85, Part XXIII, the upper sides of the leaves alone being shown, and domatia are, of course, on the under surface.

A. G. Hamilton has investigated the domatia of this species:—

"Group II.—Pouches formed by a widening of the principal and lateral veins at the axils, the space being filled in with tissue so as to form a triangular pouch or pocket. To this group belong the domatia in *Dysoxylon Fraseranum*."—(*Proc. Linn. Soc. N.S.W.*, 1896, p. 763.) . . . .

"Group II. *Dysoxylon Fraseranum*, Benth.—The domatia are in the principal axils of the leaf or leaflet; and, so far as I have seen, this form never occurs in the secondaries. Sometimes they are found on only one side of the midrib, but generally on both. They vary in number from one to twelve. The leaves of a plant growing in a shady situation are very dark green and shining, on the under side lighter. From a sunny spot, they are much lighter in colour and smaller. The leaf wets readily on the upper side, but is greasy below. The pits do not appear much on the upper side of the leaf, but on the lower side they are very prominent, sometimes projecting above the leaf surface 3 mm., and then are corky and diseased-looking. The size is on an average 3 x 2 mm. The opening is wide and arched. Vessels occur in the walls. The interior is hairy, the points of the hairs projecting from the mouth. There are no stomata inside the domatium.

"The substance of the domatium roof consists of—(1) cuticle; (2) epidermis; (3) close palisade-tissue in two layers of very narrow cells, which are nearer the normal shape and arrangement than any I have seen in other plants; (4) close spongy parenchyma; (5) epidermis; and (6) cuticle. Here and there in the spongy parenchyma occur spherical interspaces of large size and destitute of contents. In the diseased-looking domatia of great thickness I found that the spongy parenchyma layer was of greater thickness, the hairs absent, and the roof and floor epidermal cells filled with a red substance, which formed a thick layer on both roof and floor. I fancy that this diseased state is caused by some insect (not a mite) taking up its abode in the domatia, as I repeatedly found remains in sections of some rather large insect. The mites were found in a few of the domatia, and in all the domatia were found dust, pollen grains, and both spores and mycelium of fungi. It is rather remarkable that these should be so plentiful, as from the mouth opening towards the apex of the leaf, and the leaf itself having a horizontal position, they could scarcely be washed in by rain, especially as they are on the under side of the leaf. I did not find such quantities of foreign matter in any other domatia, even of those with orifices as large. But Dr. Lundström notes the same kind of thing in many species examined by him."—(*Proc. Linn. Soc. N.S.W.*, 1896, p. 776.)

Timber.—Already fully described in Part XXIII.

Size.—See Part XXIII.

Habitat.—See Part XXIII.

EXPLANATION OF PLATE 93.

A–F. Fac-simile of original drawings in Mém. Mus. Paris, XIX.

" *Hartighsea Fraserana.*"

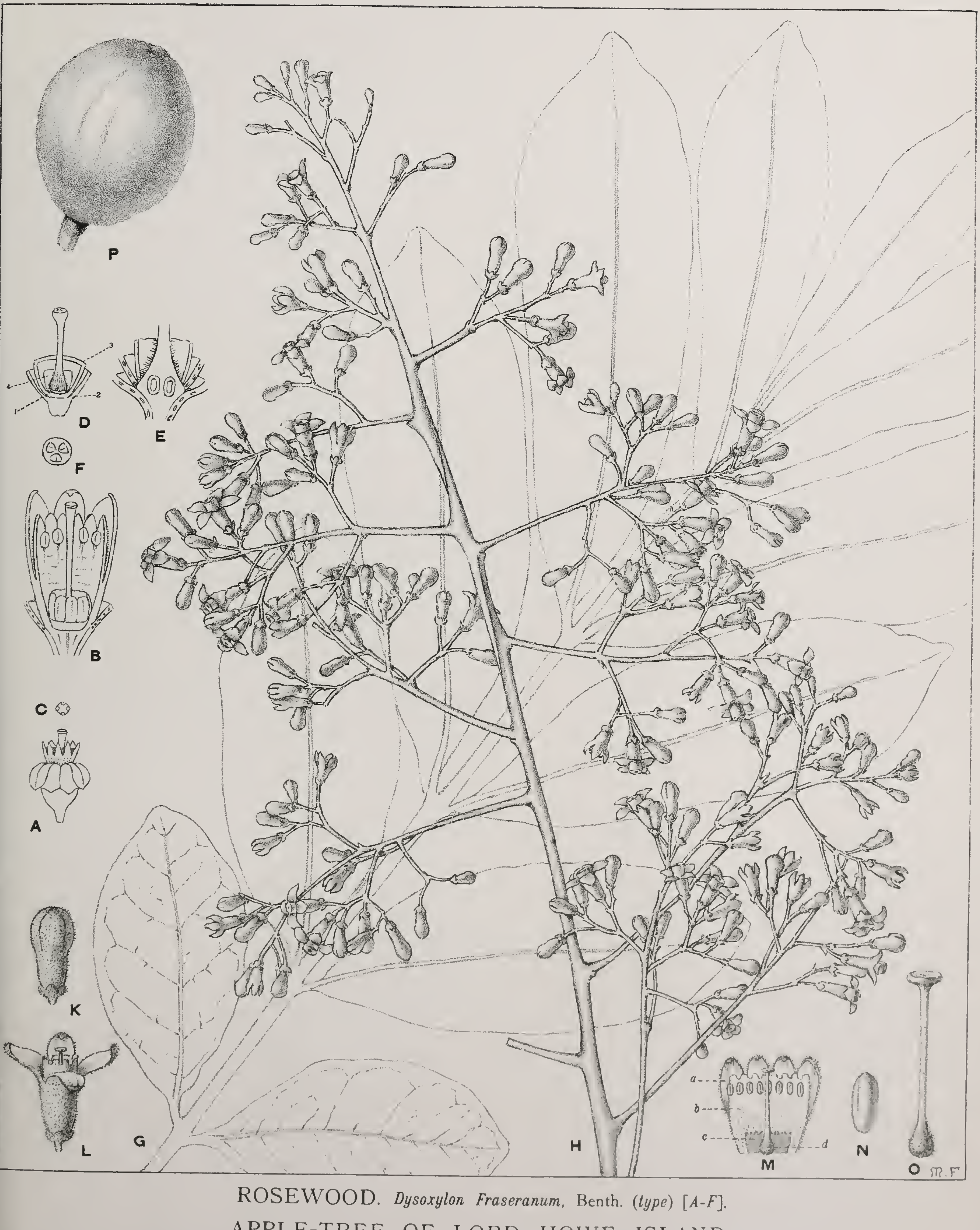
Following is the original legend, with translation in brackets:—

A. Fleur (flower).
B. Coupe verticale de la fleur (vertical section of flower).
C. Pollen.
D. (1) Pistil.
  (2) Calice (calyx).
  (3) Base de la corolle et du tube staminal réunis (base of the corolla adherent to the staminal tube).
  (4) Disque tubuleux (tubular disc).
E. Coupe verticale de l'ovaire et des parties environnantes (vertical section of the ovarium and of the surrounding parts).
F. Tranche horizontale de l'ovaire (horizontal section of the ovarium).

(Compare Plate 85, Part XXIII.)

G–P. *Dysoxlyon pachyphyllum*, Hemsley.

G. Leaf (composed of leaflets).
H. Flowering branch.
K. Bud.
L. Flower.
M. Flower, opened out, showing—
  (*a*) Corolla.
  (*b*) Staminal tube.
  (*c*) Tubular disc.
  (*d*) Pistil.
N. Anther.
O. Pistil.
P. Fruit.



ROSEWOOD. *Dysoxylon Fraseranum,* Benth. (*type*) [*A-F*].

APPLE-TREE OF LORD HOWE ISLAND.

D. pachyphyllum, Hemsl. (*co-type*) [*G-P*].

No. 90.

Eucalyptus virgata, Sieb.

A Virgate Eucalypt.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus*. (See Part II, p. 33.)

Botanical description.—Species, *virgata*, Sieb., in Sprengel's *Cur. Post*, 195 (1827).

The species may be described in the following words :—

An erect shrub or small tree, smooth, or with a little ribbony bark, and pale-coloured wood.

Juvenile leaves — Glaucous, lanceolate or narrow elliptical.

Mature leaves.—Slightly falcate, lanceolate, tapering to a fine point, 3 to 6 inches (commonly 4 inches) long, with a twisted petiole of half an inch. Texture thick, very coriaceous. Equally green and shining on both sides, the midrib and primary veins often strongly marked. Intramarginal vein not far removed from the edge.

Buds.—Angular, operculum pointed, calyx gradually tapering into a flattened peduncle.

Flowers.—Usually six to ten in the head, the former being a common number. Anthers reniform.

*Fruits.**—Sub-cylindrical, about $\frac{3}{8}$ inch in diameter, and about $\frac{5}{8}$ inch in length to the commencement of the short petiole. Rim broadish, flat-topped, or slightly sunk.

Habitat.—Port Jackson is the home of the type, particularly Middle Harbour. It occurs north and south of it for many miles in its perfectly typical form. It is, however, admixed with the blunt operculum form throughout its entire range.

Varieties.

1. *obtusiflora* var. nov. (Syn. *E. obtusiflora*, DC.)

An erect shrub or small tree, smooth, or with a little ribbony bark, and pale-coloured wood.

Juvenile leaves.—Broadly lanceolate, somewhat similar in shape to the adult leaves, only larger. Approximate dimensions 4 to 6 inches long by $1\frac{1}{4}$ inch broad.

Mature leaves.—Rigid, very coriaceous, ovate-lanceolate, slightly oblique, leaves sometimes blunt, sometimes hooked ; rarely 1 inch wide (usually $\frac{3}{4}$), and up to 4 inches or a little more long. The venation marked.† Colour of leaf pale or yellowish green, often glossy, and the margin often reddish. The intramarginal vein some distance from the margin. The transverse veins starting out at a fairly uniform angle to the midrib. As Bentham puts it (B.Fl. iii, 189) : "Leaf veins not close, often very oblique, but all inserted along the midrib."

---

* Although fruits were not preserved with the types of either *E. virgata* or *E. obtusiflora*, there is no doubt that most of the fruits of the pointed operculum series (*virgata*) are more sub-cylindrical than those of the hemispherical or blunt operculum series (*obtusiflora*), but nearly hemispherical fruits are found on plants of *virgata*, while sub-cylindrical fruits are found on plants of *obtusiflora*.

† This is especially the case where the trees grow close to the coast.

Buds.—Clavate and umbonate, sometimes even pointed.* Some specimens from Botany and National Park have the operculum hemispherical, apparently without sign of umbo. This form frequently shows the double operculum.

Flowers.—The peduncles are somewhat angular; the calyx tube short and broad (Bentham), but this is not a constant character.

Fruits.—4- to 5-celled, flat-topped, wrinkled, brown and shiny, like *E. Luehmanniana*, but smaller. Some specimens from Loftus have slightly urceolate 4-celled fruits, which have thin rims, and are depressed.†

2. *stricta*, var. nov. (Syn. *E. stricta*, Sieb.)

This is the Scrubby Gum of the Blue Mountains, a dwarf gum, very abundant on the higher parts of the Blue Mountains and other elevated parts of the State, where it often forms an almost impenetrable scrub. On the bleakest parts of our ranges, up to between 4,000 and 5,000 feet, this dwarf gum luxuriates. It is often looked upon as mallee, but it is not one of the true mallee species of the drier parts of this and other States, which have thickened root stocks. It is strict (erect) in its habit; hence the specific name. It is too small for timber.

Height from 6 to 15 feet, with bark falling off in strips, leaving smooth stems, and timber pale-coloured.

Juvenile leaves.—Rather narrow-lanceolate.

Mature leaves.—Rigid, very coriaceous, varying from narrow-linear to ovate-lanceolate. Usually hooked at the apex. Often glossy.

Buds.—The operculum very short, nearly hemispherical, surmounted by a point (umbonate). Much shorter than the calyx tube. Bentham speaks of the buds as ovoid. This is hardly true as a general rule.‡ They are clavate, and often yellowish, especially the operculum.

Flowers.—The stamens are folded in the bud, and the anthers are all fertile and renantherous. The peduncles flattened or angular. Each with 4 to 8 (Bentham), or 5 or 6 (De Candolle), shortly pedicellate small flowers; the calyx tube not 2 lines in diameter, tapering.

Fruits.—Globose-truncate, smooth, often glossy, up to 5 lines broad and 6 deep, but varying in size, contracted at the orifice, *i.e.*, slightly urceolate, the rim narrow or thin, the capsule sunk, and the valves not protruding. Usually the valves are very much sunk, but occasionally (*e.g.*, at Wentworth Falls) the tips of the valves are flush with the top of the capsule. The capsule is usually sunk in Blue Mountain specimens, the edge of the capsule (rim) being thin and gradually sloping into the orifice.

In this variety we have :—

1. The so-called mallee form.
2. The arboreal form.

distinct looking enough in extreme forms, but they run into one another.

The arboreal form besides its size has broader leaves.

But the two forms cannot always be separated on herbarium specimens.

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* It is quite impossible to take the bluntness of the buds (on which the species name was given) as a character. The transition in this and other respects to typical *E. virgata*, Sieb., is absolute.

† Some fruits from Botany are almost hemispherical and 5-celled; they are apparently a connecting link with *E. stricta*. I am of opinion that it is not possible to discriminate between some forms of *stricta* and *obtusiflora* without fruits.

‡ Bentham notes that the operculum is not longer than the calyx tube. It is usually very much shorter. It may be remarked that in regard to the general shape of the operculum, with its umbo, this species bears resemblance to var. *obtusiflora*.

Range.—The Blue Mountains and Jenolan Caves on the west, and the Braidwood and Moruya districts on the south. I am in doubt as to its northern range. Mr. Henry Deane has sent specimens from the range dividing the Bellinger and Clarence waters, which are nearest to var. *stricta*, and form one of the interminable series between it and *E. virgata*. It is specially interesting, as the species (in its scrubby form) had not previously been recorded much north of Port Jackson.

3. *fraxinoides*, var. nov. (Syn. *E. fraxinoides*, Deane and Maiden.)

A tall tree.

Bark.—Smooth-barked, the outer layer falling off in ribbons; the bark blotched, reminding one somewhat of a Spotted Gum (*E. maculata*) as regards its blotches, and *E. viminalis* (Ribbon Gum) as regards the stripping of the outer bark.

Timber.—Pale-coloured, light in weight and colour, fissile.

Juvenile leaves.—Only seen in the alternate stage, varying from bluntly lanceolate to almost linear-lanceolate; slightly falcate; twigs very glaucous.

Buds.—Ovoid when young; as growth proceeds the operculum more or less pointed at the top, and thus assuming a somewhat conical shape; up to 7 or 8 in the umbel.

Flowers.—The peduncles flattened; the stamens inflexed in bud; the anthers reniform, with a very large gland at the top (in a very young state).

Fruit.—Shining, nearly globular; usually $\frac{7}{16}$ inch in diameter, or a little less; urceolate in young fruit, the neck being almost lost in the mature fruit. The rim sharp. The valves usually five, and very depressed.

Range.—On high mountain ranges of the extreme southern part of New South Wales (Tantawanglo Mountain, near Cathcart).

The affinity of this variety is closest to var. *stricta*. It differs from the latter in being a large tree, in the shape of the fruits, and in the venation of the leaves.

The fruits are sometimes not very dissimilar in shape to those of *E. maculata* and the small form of *E. corymbosa;* but the White Ash has no real affinity with either species, as it belongs to a different group entirely.

4. *triflora*, var. nov.

See *E. stricta* (*Proc. Linn. Soc. N.S.W.*, 1900, p. 108). Top of Pigeon-house Mountain (2,360 feet), near Milton (R. H. Cambage).

A small tree, a White Ash.

Mr. Cambage's note is—"Bark dark, rough at base, then tones off. Lower part only a little rough. Not even as rugged as *E. pilularis.*"

Fruits nearly sessile, and in threes, hence the name proposed for this variety. Fruits nearly hemispherical, with a slight tendency to be urceolate.

The fruits of the arboreal form of *stricta* from Blackheath are also sessile, and are akin to this form. It would be desirable to ascertain, over large areas of country, to what extent the arboreal form of var. *stricta* has sessile fruits in threes.

Speaking generally, the coastal forms are *E. virgata* and its variety *obtusiflora*, while the mountain forms are those of var. *stricta*.

At first sight *E. virgata*, Sieb., with its broad, flat, horizontal fruit rim; var. *obtusiflora* (*E. obtusiflora*, DC.), with its blunt operculum; and var. *stricta* (*E. stricta*, Sieb.), with its sunk fruit rim and somewhat urceolate-shaped fruit, are distinct enough in appearance; but when one examines a large series it is evident that we have no constant character to separate them.

And specimens, *e.g.*, from the southern mountain ranges and South Coast, will not fall under any of the above typical forms. I find myself, at different times, arranging specimens from the same district and possibly from the same tree under the three species (or varieties) referred to, certainly with good reason in each case.

Specimens from Sugarloaf Mountain, near Braidwood, for example, would certainly be placed under var. *stricta* if they stood alone, but the fruits in the broadish rim of some of them show transit to *E. virgata* (typical).

From many other localities instances of the unstable character of the forms of this protean species could be cited.

E. virgata (type) and varieties *obtusiflora* and *stricta* as regards suckers, leaves, buds, fruits, all run into each other.

The closest variety to the type is that of var. *obtusiflora*.

Botanical Name.—*Eucalyptus*, already explained (See Part II, p. 34); *virgata*, Latin, twiggy, hence shrubby.

Vernacular Name.—I know of no name employed to designate this Eucalypt or its forms. In fact, this group of Eucalypts seems to be singularly destitute of any vernacular designation whatever. "Scrubby Gum" is no useful designation, for such a name is applicable to scores of species. In default of a better, I suggest the name "Virgate Eucalypt or Gum."

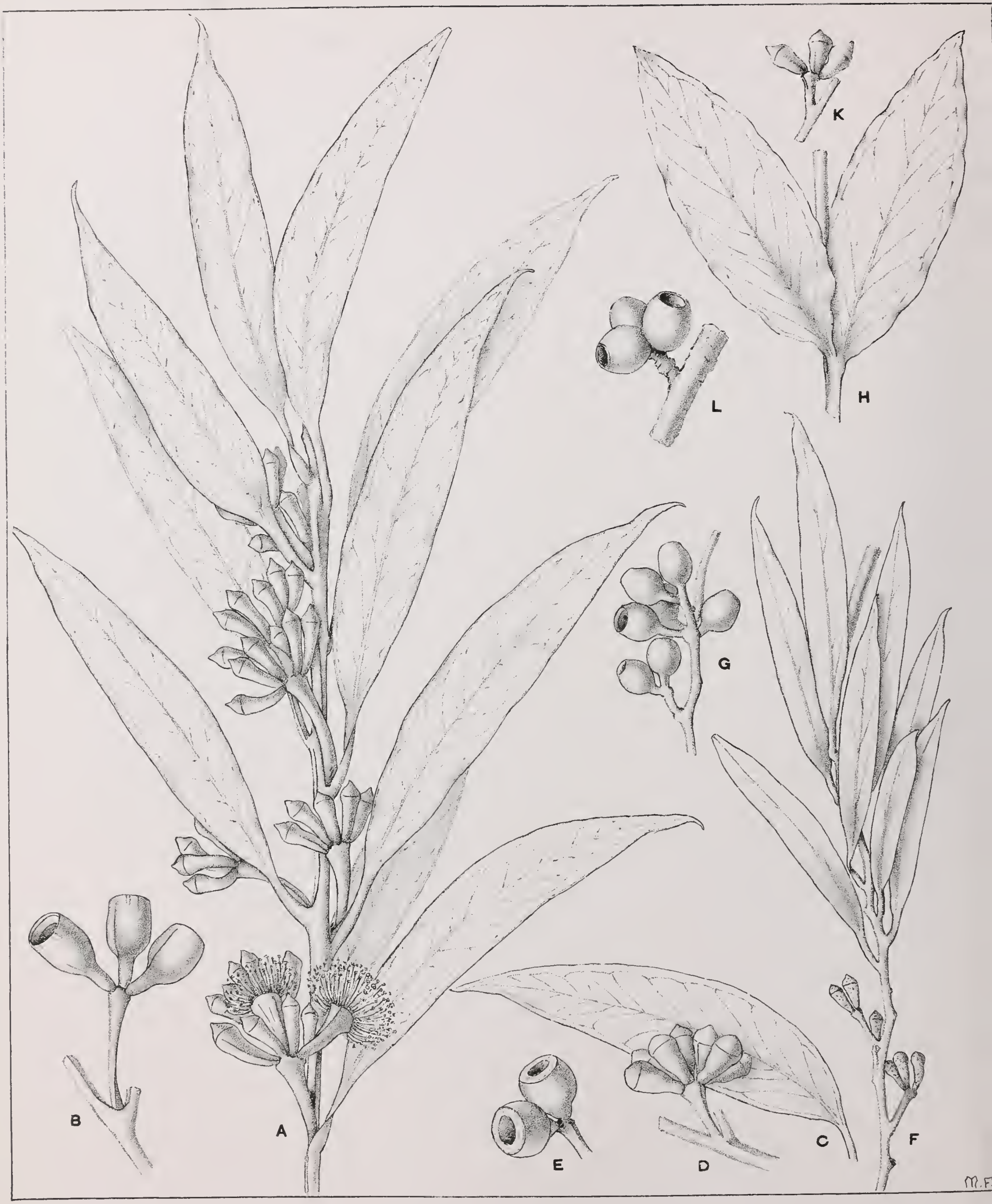
Aboriginal Name.—I know of none.

Synonyms.—Already dealt with.

Timber.—This group of shrubs and small trees yields a pale-coloured timber of inferior quality.

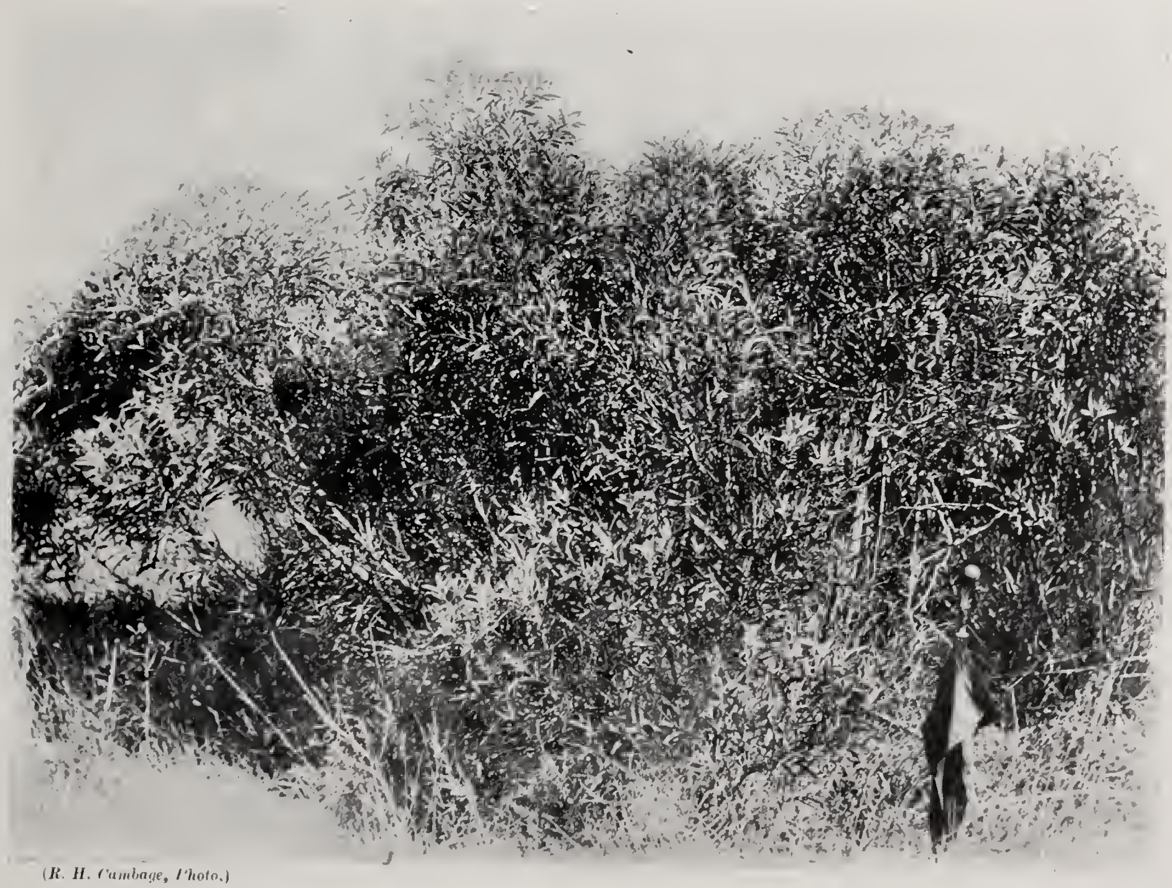
Size.—Usually forming tall shrubs of under 15 feet, but the varieties *stricta* and *fraxinoides* form medium-sized trees, not, however, yielding great bulk of timber.

Habitat.—Already dealt with in speaking of the respective varieties.



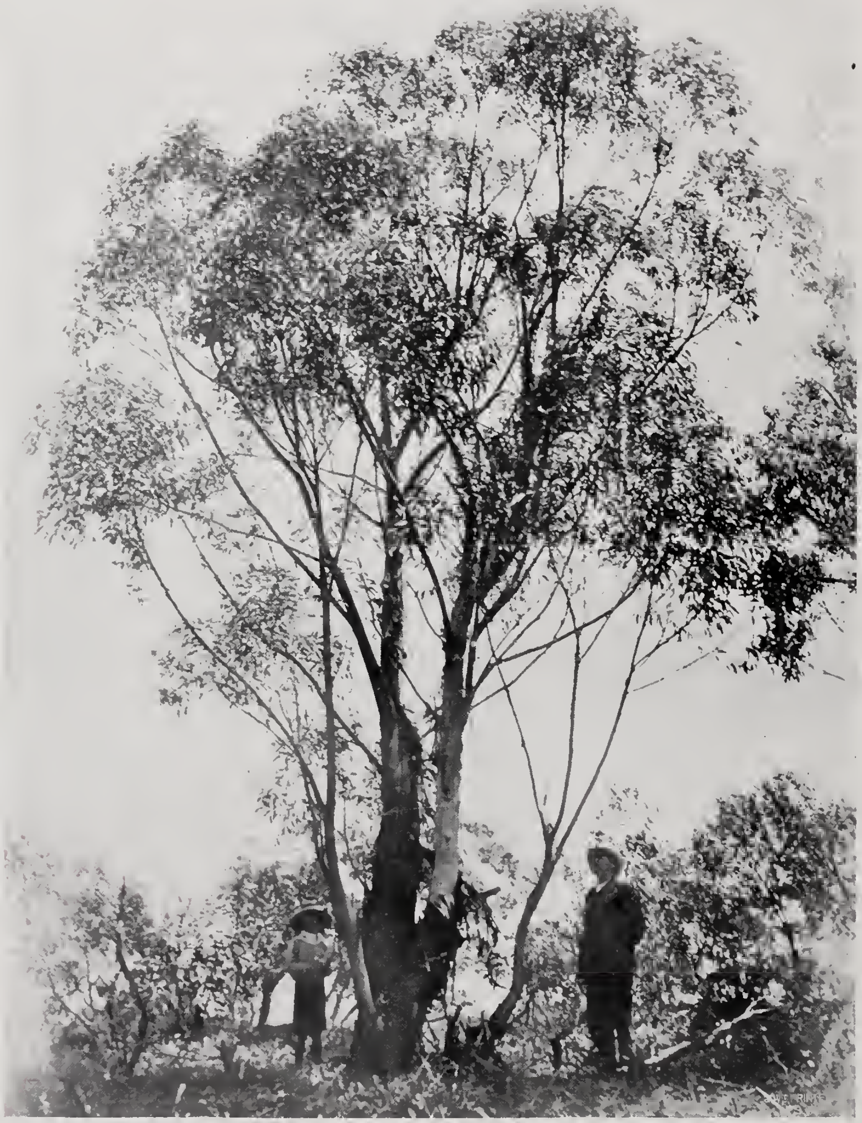
A VIRGATE EUCALYPT.

(*Eucalyptus virgata*, Sieb.)



(R. H. Cambage, Photo.)

CLUMP OF VARIETY *stricta*, LAWSON, BLUE MOUNTAINS, NEW SOUTH WALES.



(*R. H. Cambage, Photo.*)

Hybrid Eucalyptus, allied to Variety *stricta*, Blackheath.

EXPLANATION OF PLATE 94.

A. Flowering twig of *E. virgata* (type) from Port Jackson.

B. Fruits of the same.

C, D, E. Leaf, buds, and fruits of var. *obtusiflora* (drawn from type specimen). Collected at Port Jackson.

F, G. Twig with buds, also fruits, of var. *stricta* (drawn from type specimen). Collected in the Blue Mountains.

H, K, L. Sucker-leaves, buds, and fruits of that form of var. *stricta* which, under favourable conditions, grows into a fair-sized tree. (This particular specimen came from Blackheath, Blue Mountains.)

Photograph showing a clump of variety *stricta*, at Lawson, Blue Mountains (R. H. Cambage).

Photograph of a hybrid Eucalyptus allied to variety *stricta*, Blackheath, Blue Mountains (R. H. Cambage).

No. 91.

Acacia binervata, DC.

The Two-veined Hickory.

(Family LEGUMINOSÆ : MIMOSÆ.)

Botanical description.—Genus, *Acacia*. (See Part XV, page 103.)

Botanical description.—Species, *binervata*, DC. Prod. ii, 452.

A tall shrub or a tree, attaining sometimes 30 to 40 feet, glabrous, with slightly angular branchlets, soon becoming terete.

Phyllodia falcate, oblong or lanceolate, narrowed at each end, mostly 3 to 4 inches long, with 2 or 3 longitudinal nerves and pinnately veined between them, the marginal gland below the middle rather conspicuous.

Peduncles rather slender, 3 to 8, at first in an axillary raceme, but after flowering the raceme often grows out into a leafy branch with the peduncles at the base, each bearing a globular head of about twenty flowers, mostly 5-merous.

Calyx scarcely half as long as the corolla, sinuate-toothed.

Petals smooth.

Pod long, flat, and very thin, about ½ inch broad.

Seeds obovate, longitudinal along the centre of the pod.

Funicle folded and dilated under the seed but not surrounding it. (B.Fl. ii, 390.)

Botanical Name.—*Acacia*, already explained (see Part XV, page 104); *binervata* (Latinised adjective, from *nervus*, a nerve or vein) denoting "two-nerved," in allusion to the two veins in the leaves (phyllodia), a characteristic so readily recognised that every student can bear it in mind.

Vernacular Names.—In the Illawarra district, where this Wattle is particularly abundant, and attains its greatest luxuriance, it usually goes under the name of "Black Wattle"; but, to save confusion, it would appear desirable to restrict the use of this term as far as possible to the forms of *Acacia decurrens*.

It shares with other broad "leaved" Wattles the name of "Hickory," and, in order to distinguish it, the name "Two-veined Hickory" is proposed.

Aboriginal Name.—"Myimbarr," of the aborigines of Illawarra (New South Wales).

Synonym.—*A. umbrosa*, A. Cunn. in G. Don, *Gen. Syst.* ii, 405. For a note on some confusion which has arisen in regard to *A. umbrosa*, see under *A. elata*, Part XXII, p. 24.

Leaves.—Note the two well-marked veins on the phyllodes (leaves) of this species.

Fruit.—The dimensions of the pods of this species vary somewhat.

Bark.—It yields a valuable bark; specimens from Cambewarra, N.S.W., yielded me up to 58·03 per cent. of extract, and 30·4 per cent. of tannic acid. The colour of this sample was dark brown; the inner bark warm red-brown; the outer bark deeply-fissured or flaky, which makes it more or less pulverulent; the inner bark contains abundance of strong fibre; diameter, 12 inches; height, 20 to 25 feet; locally called "Black Wattle." (*Proc. R.S., N.S.W.*, 1887, p. 90.)

A second sample from the same locality gave 28·2 per cent. of tannic acid, and yielded 51·5 per cent. of extract.

I have examined a specimen from Tomerong, near Jervis Bay, N.S.W. (between Nowra and Milton), which was collected February, 1888, and analysed the following September. (*Proc. R.S., N.S.W.*, 1888, p. 273.) As received, it had had its first crushing in the mill; nevertheless it was possible to pick samples showing a fair proportion of inner and outer bark. The outer bark is somewhat scaly, and the inner bark is light reddish-brown and very fibrous. It cannot be mistaken for *A. decurrens* bark owing to its fibrous nature. It gave tannic acid 19·3 per cent.; extract, 37·8 per cent.

This sample was taken from bulk actually used by a tanner, and it will be found, in general, that barks containing 20 per cent. of tannic acid are commonly used by country tanners; in fact, if bark of a species gives as high as 15 per cent. of tannic acid, it is worthy of inquiry whether richer specimens are available.

The above are southern localities; following are from northern:—

Bark from Booral, county of Gloucester, stripped in July, and analysed in August, gave 28 per cent. of tannic acid, and 51·55 per cent. of extract. It was from a tree 30 feet high, and 8 inches in diameter.

A further sample from Stroud (in the same neighbourhood) collected in January, gave 27·75 per cent. of tannic acid, and 48·9 per cent. of extract.

This tree is frequently a large tree, and yields much bark.

Timber.—The wood is close-grained, tough, and light, and much prized for axe-helves and bullock-yokes. As regards colour, it varies between a dirty white and pinkish and a uniform dirty colour, similar, but more intense, than California Red Pine. The specimens seen by the author have no figure. Three slabs of this wood in the Technological Museum, which have been seasoned over twenty-five years (having been exhibited at the London International Exhibition of 1862, under the names *A. binervata*, *A. umbrosa*, and *Pithecolobium umbrosum**), have weights which correspond to 50 lb. 8 oz., 51 lb. 4 oz., and 56 lb. 11 oz. respectively per cubic foot.

Exudations.—Like many other Wattles, it exudes a crude gum arabic.

Size.—One of the largest of the Wattles. Specimens in the Berry district, for example, are large forest trees, very umbrageous, with foliage almost to the ground, and handsome in shape. The height of the tree may be stated at (say) 40 feet as a general rule, with a stem-diameter of 9 inches to a foot and more.

Habitat.—It is found in New South Wales and Queensland. In the former State it occurs as far south as Mount Dromedary, but it appears to attain its greatest luxuriance in the Illawarra. North of Port Jackson it is less plentiful, becoming more and more scarce to southern Queensland. Going west, it is found sparsely in New England, and also in the Mudgee district.

Fungus.—The fungus *Uromycladium notabile* (Ludw.), McAlpine, forms large galls on this wattle.

Propagation.—I commend this as one of the best species to grow in the Sydney district, where a large umbrageous wattle is required. While not objecting to good soil, it grows remarkably well in the poorest soil. For example, it grows the most luxuriantly of all wattles in the Centennial Park, Sydney, a place of sand, with much ferruginous hard pan.

EXPLANATION OF PLATE 95.

A. Flowering branch.
B. Flower-head.
C. Individual bud.
D. Flower.
E. Flower, opened out, showing—
    (*a*) Calyx.
    (*b*) Corolla.
    (*c*) Stamens.
    (*d*) Pistil.
F. Stamens.
G. Bracts found at the base of each flower.
H. Pod, Stroud district.
K. Pods, Moruya district.
L. Seed, Moruya.

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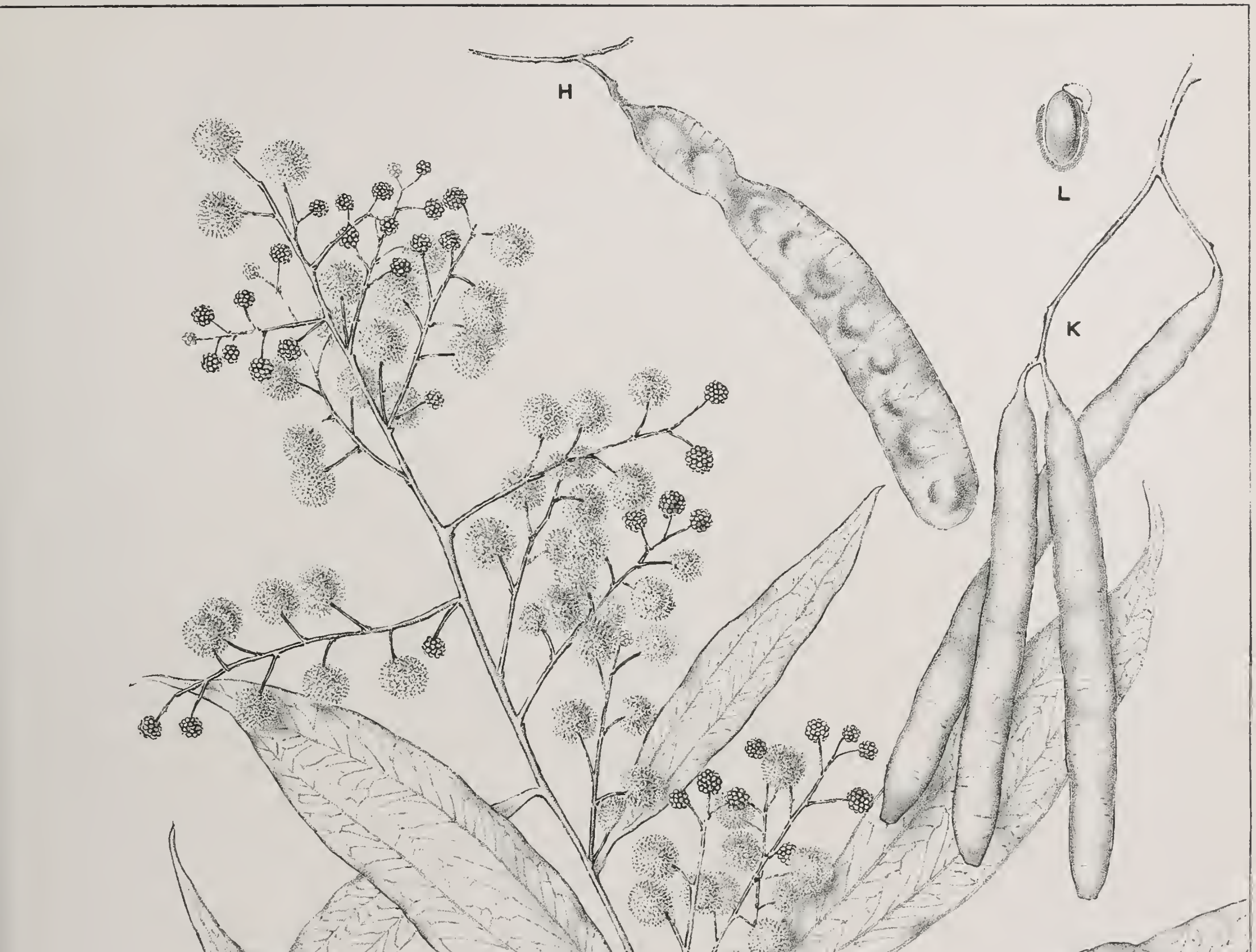
* This name originated in a mistake as regards this particular timber. How it arose does not matter now. The late Mr. Moore's private copy of this Catalogue has the name *Acacia umbrosa* crossed out and *Pithecolobium pruinosum* inserted, in regard to this third specimen.



TWO-VEINED HICKORY.

(*Acacia binervata*, DC.)

No. 92.

Melia Azedarach, L., var. australasica, C. DC.

The White Cedar.

(Family MELIACEÆ.)

Botanical description.—Genus, *Melia,* L.

Calyx.—5- or 6-cleft.

Petals.—5 or 6, linear-spathulate, spreading.

Staminal tube.—10- or 12-toothed; anthers 10 or 12, within the summit.

Disc.—Annular.

Ovary.—3- to 6-celled; style slender, with a capitate lobed stigma; ovules 2 in each cell, superposed.

Drupe.—Succulent, with a bony 1- to 5-celled putamen.

Seeds.—Solitary in each cell; testa crustaceous; albumen fleshy, sometimes scanty or none, cotyledons leaf-like. Trees.

Leaves.—Usually twice or thrice pinnate, with petiolulate toothed leaflets.

Flowers.—Paniculate.

Botanical description.—Species, *Azedarach,* L., *Sp. Pl.* 384 (1753).

An elegant tree, the young leaves, shoots, and inflorescence sprinkled with a mealy stellate tomentum which disappears with age.

Leaves.—Twice or rarely thrice pinnate; leaflets petiolulate, opposite, with a terminal odd one, ovate to almost lanceolate, acuminate, 1 to 2 inches long, entire, coarsely toothed or sometimes lobed.

Panicles.—Loose, shorter than the leaves, retaining the mealy tomentum late, especially on the calyx and petals.

Sepals.—Small, ovate.

Petals.—4 to 5 lines long.

Staminal tube.—Hirsute inside behind the anthers, the teeth alternately entire and 2-cleft; anthers glabrous or slightly hirsute.

Ovary.—5-celled.

Drupe.—Ovoid, ½ to ¾ inch long. (B.Fl. i, 380).

Bentham (*loc. cit.*) proceeds to say:—

> The Australian tree appears to me identical with the *M. composita* of East India and the Archipelago, and scarcely differs from the more common *M. Azedarach,* except in the more abundant mealy tomentum, especially on the inflorescence and flowers. The drupe is also usually larger and more ovoid.

Casimir de Candolle, in his Monograph of the Meliaceæ, Prodromus Supplement (Suites au Prodromus, i, 452), names our form *australasica,* defining it in the following words:—

> *australasica*; partibus junioribus farinosorufescentibus, pinnulis obtuse serratis integrisve; paniculæ folium dimidium circiter æquantis ramis plerumque oppositis, verticillatisve; tubo stamineo

extus laciniis filamentosis crinitis; petalis quam in precedente densius puberulis; drupa ellipsoideo-globosa. M. Australasica, A. Juss. mem. Mel. In Nova Hollandia (Calley [Caley.—J.H.M.] in herb. Deless. et Berol.); in Lima culta (Ruiz in herb. Berol.).

Botanical Name.—*Melia*, the Greek name of the Manna Ash (*Fraxinus Ornus*), and applied to this tree because of a supposed resemblance of its leaves to those of the Ash; *Azedarach*, from the Persian "Azad-darakht," the name more strictly applied to *M. Azadirachta*, the common Indian "Neem" tree, but applied by Linnaeus to a closely related congener.

Vernacular Names.—Universally known in Australia as "White Cedar." In other countries it has other names. In India it is known as "Persian Lilac," also as "Bastard Cedar" and "Bead Tree" (the last because the fruits, with the pulp removed, are strung together as beads, and for rosaries).

Aboriginal Name.—"Dygal" and "Dtheerah" were names employed by New South Wales aborigines. "Kilvain" of the blacks of the Lower Tully River, Queensland. (Dr. Roth, Ethnog. Bull., No. 3.)

Synonyms.—*M. australasica*, A. Juss. in *Mem. Mus. Par.* xix, 257.

I have followed M. Casimir De Candolle, the monographer of the Meliaceæ. In his Prodromus Supplement (1878) he keeps *M. Azedarach* and *M. dubia* as separate species. He makes our Australian tree a variety (*australasica*) of *M. Azedarach*, as I have already shown.

He makes *M. composita*, Willd. (non *DC. Prod.*) a synonym of *M. dubia*. He states that *M. Azedarach*, and not *M. dubia*, is a native of Australia.

The earlier work of Hooker (*Flora of British India*, i, 544, 1875) while agreeing that *M. composita* is synonymous with *M. dubia*, makes *M. dubia*, and not *M. Azedarach*, a native of Australia.

Flowers.—It bears a profusion of fragrant lilac-coloured flowers, hence one of its vernacular names.

Fruit.—On the 22nd October, 1888, the honorary secretary of the Adelong School Board wrote:—

> Recently a pupil of the Adelong Public School was taken suddenly and seriously ill, apparently having eaten something of a poisonous nature. She stated to her doctor that she ate some berries that grow on the White Cedar trees in the playground.

I would invite my readers' attention to the following data collected by me and published in the *Agricultural Gazette* under the heading "The alleged poisonous nature of White Cedar berries."

Here is quite a recent report:—

> Penrith.—Three pigs belonging to Mr. W. Magrath, of Emu Plains, have been poisoned through eating White Cedar berries. Several other pigs died some months ago from the same cause.—(January, 1906.)

At the same time the cedar berries are not always poisonous to pigs,—either because pigs do not often eat them, or because they do not feed solely upon them. I believe that if pigs are not allowed to get too hungry there is not the slightest danger to be feared from this tree. At the same time, I admit that it would be desirable to make a careful inquiry in regard to this very common tree, under the superintendence of a veterinary surgeon.

The *Garden and Field* of Adelaide, for September, gives the following, which occurred in South Australia:—"A White Cedar tree requiring pruning, the surplus branches were cut off and thrown over the fence into a paddock. Several pigs and cows picked off and ate the berries. The result was that the pigs died and the cows became very ill, but recovered after three or four days—one effect being a falling off in milk in the one day from half a bucket to a cupful. Mr. Bagshaw was at first unable to account for the sudden death of his pigs, but on cutting them open found the berries in their stomachs. Mr. Hackett states that in some places pulp of the berries of the White Cedar is used for poisoning dogs, being mixed with fat for the purpose."—(*Agric. Gaz. N.S.W.*, Nov., 1893, p. 853.)

"The fruit has poisonous properties, but is nevertheless used in leprosy and scrofula in India."—(*Dymock, Materia Medica of Western India.*)

Drury (*Useful Plants of India*) quotes Ainslie:—"The pulp surrounding the seeds is said to be poisonous, and, mixed with grease, is reputed to kill dogs." But Drury adds:—"This, however, is doubtful."

Brandis quotes Madden:—"The bunches of yellow fruit ripen in autumn and remain on the tree while it is leafless, untouched by animals, except the bulbul." Dr. Brandis makes no mention of their poisonous properties, which, it may be assumed, were not known to him.

Lindley (*Vegetable Kingdom*) says:—"The pulp that surrounds the seeds is said to be deleterious, but this is denied by Turpin, who asserts that dogs which he has seen eat it experienced no inconvenience, and children in Carolina swallow the seeds with impunity."

On the other hand, there appears little doubt that, if given in large doses, the bark, leaves, and fruits are all toxic, producing narcotism, followed by death.

Dr. Burton Brown records a case in which a European girl ate the berries, became insensible, and died. Descourtilz says that six to eight seeds cause nausea, spasm, and choleraic symptoms, sometimes followed by death.—(*Dictionary of the Economic Products of India.*)

Waring (*Pharmacopœia of India*) says:—"Poisonous properties have been attributed to the fresh berries and leaves."

In America the dried berries in whiskey have been employed against ascarides, tape-worm, and verminous diseases, and the pulp of the berries stewed in lard has been used with success against scald head. I cannot trace in any American work a case of poisoning by White Cedar berries. Bentley and Trimen (*Medicinal Plants*), Gamble (*Manual of Indian Timbers*), and Beddome (*Flora Sylvatica for Southern India*), and the writers of other important works, contain no allusion to their poisonous nature.—(*Agric. Gaz. N.S.W.*, Nov., 1893, p. 853.)

Mr. Thos. Loxton, Lower Portland, writes:—"*Re* article in July number of the *Gazette*, entitled 'Alleged Poisonous Nature of White Cedar Berries,' it may interest you to know that the farmers of the Hawkesbury River have no doubt at all that the White Cedar berry poisons pigs. I have myself lost the best one of three sows this season, and the verdict of my neighbours is that she was poisoned by cedar berries, which were lying thick on the ground. She was the greediest feeder of the three, but the other two, which were removed at once from the run, showed no symptoms of poisoning. One farmer says that the seed forms a hard lump or lumps in the bowels, and thus kills. They do not seem to hurt birds, some varieties of which are very fond of them, notably the green pigeon of the Richmond River, which, when these berries are ripe, gets so fat and lazy as to be very easily shot."

Mr. S. Pegum, Camperdown Farm, Brownlow Hill, Camden, states:—"Referring to the poisonous nature of the berries of the White Cedar, noted in the July number of the *Gazette*, an instance occurred here not long since causing the death of twenty-seven fat pigs. A mob of pigs *en route* to Sydney, having been three days on the road from Upper Burragorang, while waiting to be trucked at Camden, were driven into a paddock close to the station, so that they might rest under the shade of some White Cedars growing there. Some of the pigs lay down to rest, else all might have died; others commenced feeding on the berries scattered around under the trees, with the result that twenty-seven were dead next morning when the train arrived in Sydney. The dead pigs belonged to different owners, some to the man in charge, who was wanting in neither experience, forethought, nor intelligence, having shipped some thousands of pigs to Sydney at different times, and though reared almost within sight of these cedar trees was not aware of the poisonous nature of their berries, and I think very few are; so to let the fact be well known would undoubtedly be a public service. As they form desirable shade trees, with pleasing foliage and flowers, and are quick growers, farmers and municipalities, unaware of the toxic properties of their berries, may be induced to plant them, and injury result."—(*Agric. Gaz. N.S.W.*, Sept., 1896, p. 564.)

In connection with the "Alleged Poisonous Nature of White Cedar Berries," we have just received the following letter from Mr. Edward Gibson, of Figtree, near Wollongong:—"I saw a question asked in the last *Agricultural Gazette* as to whether any of your readers had ever had any pigs poisoned with White Cedar berries. About twelve years ago, when I lived at Dapto, I had thirty or forty store pigs in the pig paddock. The gate into the pig paddock was by some means left open, and the pigs got into an adjoining paddock where there were a lot of White Cedar trees, the seeds of which were lying thick on the ground. When I went to fetch the pigs home, five or six died on the way, and six more died when they came to the house. We did not know at all what was the cause of the mortality at the time, so I opened one of them and found its stomach full of the berries. After that we ringbarked the trees and destroyed all the berries on the ground, with the result that although the pigs were running in the paddock afterwards we never had any more deaths from that cause."—(*Agric. Gaz. N.S.W.*, Oct., 1896, p. 662.)

Following are two apparently well-authenticated instances of the death of pigs through eating White Cedar berries. As the tree is so extensively planted in this colony, it behoves owners to see that pigs at least are not allowed to gorge themselves with the berries. It is not expected that a few, eaten with other food, will occasion serious harm.

Of the first case I received information from a valued correspondent at Walcha (Mr. A. R. Crawford). He wrote:—"I enclose a note from Mr. Edward Fitzgerald, of East Cunderang, who has had trouble with his pigs: 'We have had one fat baconer die. Last night a beautiful sow died, after three days' sickness. I have just held a *post-mortem* examination, and find she died from inflammation of the stomach, which contained a lot of White Cedar berries. Another pig died this morning.' At the season when the berries were plentiful, a splendid sow died the same last year, but only one. One sow was sick last week, and is now better. She ate nothing for two days; she is still weak, but eats eagerly."

Mr. Crawford being about to visit Cunderang, he kindly obtained further details in regard to the poisoning of the pigs, at my request. Following is his further report:—

"The most striking symptom they showed was that they could lie in no other position than on their bellies. If they lay on their sides, or attempted to do so, they screamed with pain and rose on to their bellies at once. The least movement gave them pain. They would not eat, or even drink milk, for days before death.

"The *post-mortem* examination disclosed a much-inflamed inner lining of the stomach, and very much thickened. One young breeding sow refused food for two days, but ultimately recovered, though she became very poor after it.

"As a remedy, I burnt a lot of timber and made fresh charcoal for them to eat, and I fancy it had a beneficial effect. They ate it eagerly.

"There was no chance for them to get a poisoned bait, unless a stranger laid one, which is not probable. The old sow lived five days after refusing food."

The second case was reported in the daily papers during the month of August, when Mr. James Durrant, of Druewalla, Jamberoo, lost eight pigs through eating White Cedar berries. A large quantity of these berries was found in the paunch of each animal.

Perhaps the matter may be considered of sufficient importance to engage the attention of the Stock Department, if the evidence I have got together is not considered sufficiently conclusive.

Mr. S. Pegum, of Camperdown Farm, Brownlow Hill, Camden, writing on this subject, says:—

"Three small pigs ate some White Cedar berries. They soon after became very ill, unable to stand or move, heart beating feebly, with occasional spasmodic shudderings, apparently in a forward direction; limbs cold, eyes well open, but not fixed or staring. Being of opinion that they were poisoned by the prussic acid contained in the kernels of the berries, for experiment, I took one of the pigs who seemed at the time *in extremis* (couldn't raise a squeak even), and treated him accordingly, viz., put him at once into a warm bath, and as soon as it could be got ready, gave the whites of two eggs beaten up and a full teaspoon of baking soda in some warm milk and ginger. Then put him into a sugar bag with a warm brick and left him for the night well covered up, nice and snug, in a warm place. All this time, if he was not 'as dead as Julius Cæsar,' he was quite as unable to stand or move, being quite passive to all the treatment, which did not take many minutes, neither squeaking nor kicking. I do not know how long it took him to get well, but in the morning he was quite recovered, and what with the bath, &c., he looked none the worse for the trouble, being able to run about and eat as usual. The other two pigs died. Examination showed that they had eaten about a small pannikinful of the berries, which were crunched and scarcely at all digested. I herewith forward some for analysis."

The sample of berries referred to was brought under the notice of the chemist, Mr. F. B. Guthrie, who reports that they do not contain prussic acid, and he has so far been unable to identify any poisonous property.—(*Agric. Gaz. N.S.W.*, Oct, 1897, pp. 700–1.)

Mr. P. H. Morton, M.P., has informed me of two separate cases of the death of pigs (one lot travelling) through eating White Cedar berries in the Muswellbrook district.—(*Agric. Gaz. N.S.W.*, July, 1898, p. 741.)

Bark.—The bark, leaves, and other tender parts are broken up so as to get the juice to exude: it acts fairly rapidly as a fish poison (*North Queensland Ethnography,* Bull. No. 3, Roth), for which purpose it is used by the Walmal blacks of the Lower Tully River, Queensland.

The Hindoos use the flowers, fruit, leaves, and bark for many medical purposes. The root-bark is on the secondary list of the United States Pharmacopœia as an anthelmintic. In large doses it is said to produce narcotic effects, though these, if produced, pass off without injury to the system.

Timber.—This timber is coarse, soft, and easily worked, but not in very good repute. At the same time it is used in country districts. For example, it has been used for pedestals of tables at Taree; also for mouldings and architraves. It was at one time used for shingles, which are, however, of an inferior kind.

The rings in New South Wales specimens are very distinct, and their markings give the timber a rich, wavy appearance, which is best exhibited in a vertical section. The wood is a pale yellowish-brown, which appears of a rich warm brown under polish. Two slabs in the Technological Museum, which had been seasoned over twenty-five years (having been exhibited at the London International Exhibition of 1862), had weights which correspond to 33 lb. 5 oz. and 35 lb. 4 oz. per cubic foot respectively.

Following is Indian testimony concerning it:—

"Beddome, Brandis, and Kurz all say it warps and splits, but Mr. Halsey, of Madhopur, writes to say it is equally useful green or seasoned. Our specimen split only very slightly, and we are inclined to think it is better than it is supposed to be. It is handsomely marked, and polishes well. Its weight is from 30 to 38 lb. per cubic foot."—(Gamble, *Manual of Indian Timbers*)

Gamble, in his 2nd Edition, says :—

The wood was used at the Imperial Forest School for museum cases and other furniture, and behaved quite well.

I trust that thorough trials of this timber will be made in New South Wales, and that the results will be published. The tree belongs to the Cedar class, a very useful group of woods. Perhaps in New South Wales it is despised because it grows so readily.

Exudations.—The tree yields a gum similar to that produced from the Acacia, plum, and cherry trees; it may be collected in considerable quantity (Bennett). A specimen of gum, said to be derived from this tree, is in irregular tears, rather adhesive and dull, with a shining fracture, amber-coloured and brownish, rather friable, mixed with fragments of bark; tasteless, soluble in water. (Cooke, *Gums and Resins of India.*)

I have seen a small quantity of gum from this tree. Lauterer* gives an analysis of it.

Size.—Height from 40 to 60 feet, with a diameter of 2 to 3 feet. A fine umbrageous tree.

Habitat.—It is not rare in moist places in northern brush forests, and in good land in more open forests. It extends from a little north of Sydney along the coast and coast districts to North Australia. Its precise southern range I do not know. In sending specimens for record, it is of course necessary to exercise caution that they are taken from naturally grown trees, since the species is so often cultivated.

Propagation.—This is one of our few native deciduous trees. It is so hardy and such a rapid grower that it is one of the native trees most cultivated in its own country. Although a native of the coast districts, it will grow inland to a considerable distance, being very resistant to drought. It is a charming shade tree, and if any pains were taken with its cultivation (which is not often the case), it would be more admired than it is. It is so tolerant to bad usage that it gets plenty of it.

EXPLANATION OF PLATE 96.

A. Portion of leaf, showing leaflets.
B. Flowering branch.
C. Bud, one petal removed to show staminal tube.
D. Staminal tube, opened out.
E. Stamens.
F. Portion of flower, showing—
  (*a*) Pistil.
  (*b*) Disc.
G. Vertical section of ovary.
H. Transverse section of ovary.
K. Fruits (natural size).
L. Seed.
M. Transverse section of seed.

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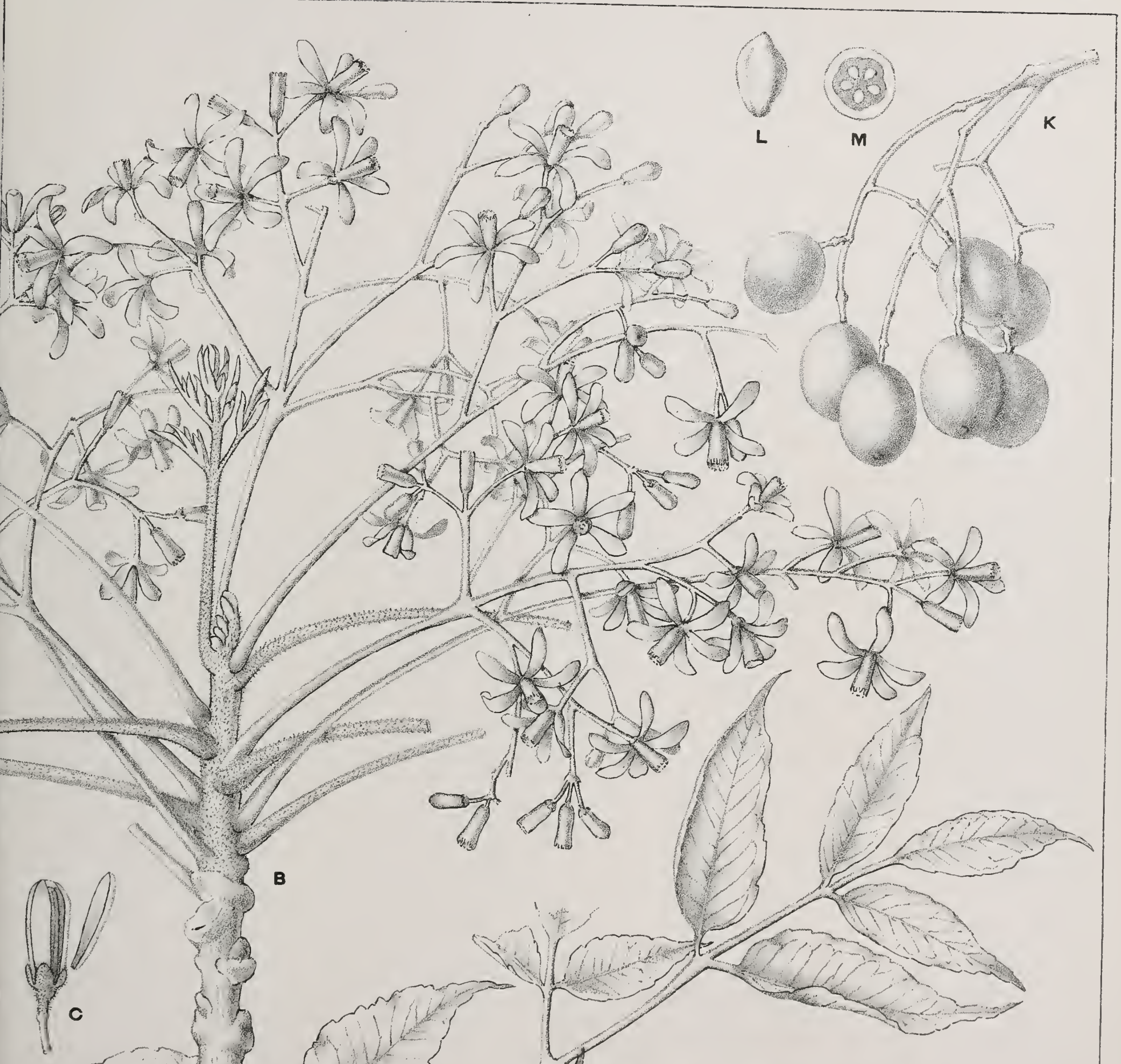
* "Gums and Resins exuded by Queensland plants chemically and technologically described." From pages 35 to 80 of F. M. Bailey's Botany Bulletin No. XIII (April, 1896), "Contributions to the Queensland Flora."

Sydney: William Applegate Gullick, Government Printer. 1907.



WHITE CEDAR.
(*Melia Azedarach, L.*)

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*):—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—The Mugga; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.).

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

PART XVI (ISSUED JUNE, 1905).

No. 64.—The Weeping Myall (*Acacia pendula*, A. Cunn.).
No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—The Drooping She-Oak (*Casuarina stricta*, Ait.).
No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—The Cudgerie (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—The Giant Gum Tree (*Eucalyptus regnans*, F.v.M.).
No. 73.—The Black She-Oak (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—The Yellow-wood (*Flindersia Oxleyana*, F.v.M.).
No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
No. 76.—The Bull Oak (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

PART XX (ISSUED JULY, 1906).

(*Sixteen Plates.*)

Volume III.

PART XXI (ISSUED AUGUST, 1906).

No. 77.—THE CROW'S ASH OR BOGUM BOGUM (*Flindersia Bennettiana*, F.v.M.).

(*Two Plates.*)

No. 78.—THE BLACKBUTT OR PEPPERMINT (of New England) (*Eucalyptus Andrewsi*, Maiden).

No. 79.—THE THREADY-BARKED OAK (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII (ISSUED FEBRUARY, 1907).

No. 80.—THE HILL FLINDERSIA (*Flindersia collina*, F. M. Bailey).

(*Two Plates.*)

No. 81.—THE BROAD-LEAVED MESSMATE (*Eucalyptus obliqua*, L'Hérit.).

No. 82.—THE CEDAR WATTLE (*Acacia elata*, A. Cunn.).

PART XXIII (ISSUED MARCH, 1907).

No. 83.—THE ROSEWOOD (*Dysoxylon Fraseranum*, Benth.).

No. 84.—THE WHITE-TOP MESSMATE (*Eucalyptus vitrea*, R. T. Baker).

No. 85.—THE ACACIA DECURRENS GROUP OF WATTLES—BLACK, GREEN, AND SILVER WATTLES (*Acacia decurrens*, Willd.).

(*Two Plates.*)

PART XXIV (ISSUED MAY, 1907).

No. 86.—THE BASTARD PENCIL CEDAR (*Dysoxylon rufum*, Benth.).

No. 87.—BASTARD TALLOW-WOOD (*Eucalyptus Planchoniana*, F.v.M.).

No. 88.—THE MOUNTAIN HICKORY (*Acacia penninervis*, Sieb.).

(*Two Plates.*)

THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 6.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXVI OF THE COMPLETE WORK.

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No. 2.—The Rusty Fig (*Ficus rubiginosa*, Desf.).
No. 3.—The Turpentine Tree (*Syncarpia laurifolia*, Ten.).
No. 4.—The Narrow-leaved Pittosporum (*Pittosporum phillyrœoides*, DC.).

PART II (ISSUED MARCH, 1903).

No. 5.—The Woolly Butt (*Eucalyptus longifolia*, Link and Otto).
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No. 19.—A Cupania (*Cupania anacardioides*, A.Rich.).

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No. 21.—The White or Grey Box (*Eucalyptus hemiphloia*, F.v.M.).
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No. 33.—The Yellow Box (*Eucalyptus melliodora*, A. Cunn.).
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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXVI.

Published by the Forest Department of New South Wales, under authority of
The Honourable the Secretary for Lands.

* * *

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No. 93.

Dysoxylon Becklerianum, C.DC.

The Hairy Dysoxylon.

(Family MELIACEÆ.)

Botanical description.—Genus, *Dysoxylon.* (See Part XXIII, p. 27.)

Botanical description.—Species, *D. Becklerianum,* Casimir De Candolle in *Suites au Prodromus,* i, 509 (1878).

Following is a translation of the original:—

Leaves a little petiolate, abruptly pinnate, 4-5 jugate.

Leaflets opposite, very shortly petiolulate, oblong lanceolate, symmetrical at the base and cuneate acute, the apex very shortly obtusely cuspidate, hairy above at the midrib and underneath at the veins; the panicles pedunculate, elongate, shortly branched, downy.

Flowers nearly sessile.

Calyx cupuliform, 4-lobed, downy outside; the petals scarcely downy.

Staminal tube cylindrical, glabrous, lacinulate, with the teeth bifid.

Tubular disc glabrous.

Ovarium hirsute.

The young branches slightly velvety, greenish.

Leaves about 16 cm. long.

Leaflets membraneous, opaque, faintly dotted, the upper ones a little larger than the rest, 8½ cm. long and 28 mm. broad; the secondary veins very faint, a little broad, about 14 on both sides. Rhachis with a petiole 4½ cm. long, terete densely villous, slightly ribbed.

Panicle scarcely exceeding half the leaf, the inferior branches about 15 mm. long, the cymes pedicellate, 3-1 flowered.

Flowers very caducous. Lobes of the calyx rounded.

Petals 4, scarcely 5 mm. long, laciniate, the apex acutely acuminate.

Staminal tube connate with the petals for a third of its height.

Anthers 8, elliptical, not mucronate, 1 mm. long.

Ovarium cells with two ovules, the ovules superposed.

(Clarence River, Beckler, in Herb. Kew.)

Botanical Name.—*Dysoxylon,* already explained (see Part XXIII, p. 30); *Becklerianum,* in memory of Dr. Hermann Beckler, who collected it. Dr. Beckler was Medical Officer and "Botanical Observer" to the Burke and Wills' Expedition. His botanical instructions will be found in *Trans. Roy. Soc. Vic.,* 1860, p. lxxii. He left the party owing to some dispute.

He collected botanical specimens at Moreton Bay, the Hastings, Macleay, Clarence, and Richmond Rivers, also between the Darling and the Barrier Range in the Burke and Wills' Expedition.

The following species were named after him, and by looking up these species in the "Flora Australiensis" and "Fragmenta" we can obtain evidence as to his botanical journeys. I do not know where and when he was born and died.

Hibiscus Beckleri, F.v.M.=*H. diversifolius*, Jacq.
Nephelium Beckleri, Benth.
Streptothamnus Beckleri, F.v.M.
Eurybia Beckleri, F.v.M.=*Olearia cydoniæfolia*, Benth.
Helichrysum Becklerii, F.v.M.
Ixora Becklerii, Benth.
Myrtus Becklerii, F.v.M.
Ozothamnus Becklerii, F.v.M.=*Helichrysum Becklerii*, F.v.M.
Cleisostoma Beckleri, F.v.M.
Dendrobium Beckleri, F.v.M.= ?
Ficus Beckleri, Miq.=*F. orbicularis*, A. Cunn.
Phyllanthus Beckleri, Muell. Arg.= ?
Polypodium Beckleri, Hook.=*Aspidium ramosum*, Beauv.

Vernacular Names.—I know of none. I have suggested the provisional name "The Hairy Dysoxylon," as it is the only species of the genus known to me which is so markedly hairy, and with such prominent venation.

Synonym.—*D. Lessertianum*, Benth. var. *pubescens*, Benth. in B.Fl., i, 382: "Young shoots, petioles, under-side of the leaflets, and inflorescence softly pubescent. Clarence River, Beckler" (*loc. cit.*). Thus Bentham looked upon the tree as a pubescent form of our common Rosewood.

Leaves.—Note their hairiness, which is a character.

Flowers.—I shall be glad if correspondents will make observations in regard to the odour of flowers of various species of *Dysoxylon*. Different observers report differently in regard to the flowers of the same species, so that the evidence becomes quite conflicting.

The following example is instructive. The flowers of *Dysoxylon rufum* (see Part XXIV), fruits also, smell sweet enough to begin with, but while being pressed they evolve a disgusting odour, presumably owing to fermentation. On one occasion a correspondent sent me flowers of *Dysoxylon rufum*, carefully packed between sheets of cardboard. They came to hand on a Saturday afternoon, and it was not convenient for me to examine them just then. On my return home I found the household complaining of an offensive smell, whose origin they could not trace. After some consideration I traced the smell to the *Dysoxylon* flowers. I accordingly put them into the hall and thought no more about them. On the Sunday morning the stench was abominable; it filled the house, so to speak, and I had to take them out of the house altogether. Yet my correspondent had reported the flowers as "sweet-scented," and he is not alone in giving such a description.

Fruits.—Unknown.

Bark.—Unknown.

Timber.—We know nothing about the timber of the tree, only small twigs having been collected; and I know of no notes on the tree, though it is very probable Dr. Beckler made some observations.

The object of publishing this illustration is to draw attention to this tree, in the hope that it may be re-discovered. Several of our native trees are only known from fragments of leaves and a flower or two. Our territory is so extensive that this is not surprising, and much botanical exploration work requires to be done yet. I imagine this tree will be found in the brushes of the Upper Clarence, perhaps cut for Rosewood or Red Bean. It should also be looked for in the Acacia Creek and other Macpherson Range forests.

Size.—Unknown.

Habitat.—The only locality known to me is Clarence River, New South Wales, where it was originally collected by Beckler. It was also collected on the Clarence by the late Mr. Wilcox, of Grafton.

Mr. Bailey, "The Queensland Flora," i, 231, records it as "southern portions of the Colony," which is vague.

So that it occurs on the Northern Rivers of New South Wales, and in that part of Queensland adjacent thereto. Like all species of *Dysoxylon*, it is, doubtless, a brush tree.

APPENDIX.

Additional Notes on Dysoxylon.

1. *Dysoxylon Forsteri*, C.DC.

I have already illustrated and described five species of *Dysoxylon* for New South Wales.

M. Casimir De Candolle, the eminent monographer of the Meliaceæ, adds a sixth species to the New South Wales *Dysoxyla*, viz.:—

D. Forsteri, C.DC. in *Monogr. Phan.*, i, 507, from the Pacific Islands (in insulis Namoka, Rotterdam, Vavao), and from the Clarence River, New South Wales; specimens from the latter locality are said to have been sent by Mueller to the Paris Herbarium. Mueller himself ignores the species in his Second Census, and, as we have no evidence of it in the Herbarium, I prefer to omit the species for the present, but invite the attention of collectors to its possible presence in the Northern brush forests.

The plant was described under the name of *Trichilia alliacea* in Forster's "Floruke Insularum Australium Prodromus" (1786). "No. 189, *T. alliacea*, foliis pinnatis, foliolis lanceolatis acutis; racemis axillaribus supradecompositis, F., Namoka." Forster figured the plant, but the plates are not published, and I have a tracing from Forster's unpublished drawing in the British Museum. This was kindly supplied by Mr. Edmund Baker, of the Department of Botany of the British Museum.

When M. De Candolle changed the name into *Dysoxylon Forsteri*, he united it with a specimen from the Clarence River, New South Wales.

The drawing does not help much in clearing up the plant as a New South Wales species, because it is taken from the Pacific Island plant, and not from the Clarence River one. According to M. De Candolle, the Clarence River specimens are identical with Forster's Namoka specimen; but, as already indicated, Mueller seems to be of a different opinion.

There the matter must rest for the present.

2. Moore (Catalogue of Northern Timbers, N. S. Wales Court, London Exhibition, 1862, No. xviii) exhibited a *Dysoxylon* timber under the name of *Hartighsia sp.* He says: "'Munduo' of the blacks, Richmond and Clarence brush forests. Small sized tree. Timber not used."

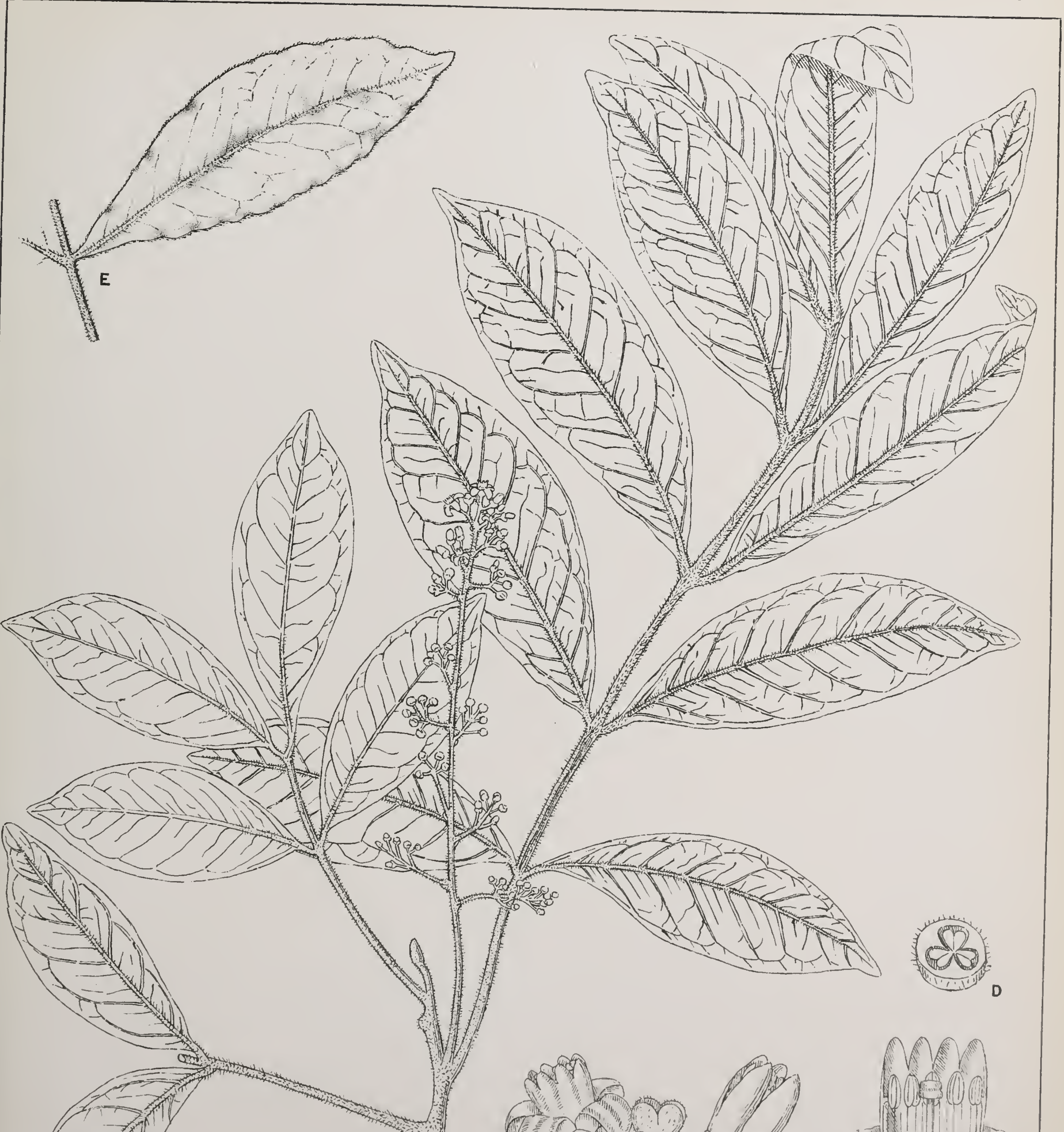
   As herbarium specimens of all the New South Wales timbers were sent to Europe, perhaps this "Munduo" can be traced.

3. The New Zealand Dysoxylon is *D. spectabile*, and goes by the name of Kohekohe. Mr. Kirk has figured and given an account of it in the "Forest Flora of New Zealand," and to him I am indebted for the particulars which follow. He describes it as one of the most striking trees of that Colony; the wood is light, but usually straight and even in the grain, rather soft, strong, and fairly durable; it is of a pale red colour when seasoned. It is adapted to the purposes of the cabinet-maker, especially where heavy timbers are ineligible; although usually plain and destitute of figure, waved and curled specimens of great beauty are frequently met with. Of late years it has come largely into demand for wire-fence posts in loose sand. In situations of this kind it is the most desirable of all New Zealand timbers, being greatly superior to Totara. The New Zealand timber would thus appear to present no important points of difference to our Rosewood; but our timber, though durable, is not, as far as I am aware, considered particularly suitable for posts, like the Kohekohe, perhaps because hardwoods are abundant with us. Mr. Kirk says the leaves are bitter and tonic, and that an infusion is occasionally used by bushmen as a stomachic. Numerous as are the tree leaves which have been put to this use in the belief that they possess properties similar to those just described, I have not heard of the leaves of a New South Wales Dysoxylon tree being deemed to possess medicinal properties.

EXPLANATION OF PLATE 97.

A. Flowering twig.
B. Three flowers. }
C. Vertical section of flowers. } Enlarged from Wilcox's specimen.
D. Section of ovary. }
E. Leaf, with a little more detail, drawn from a specimen collected by Dr. H. Beckler.

A–D drawn by Miss M. Smith, of the Kew Herbarium, under the direction of Dr. Otto Stapf; E drawn by Miss Flockton. The whole plate lithographed by Miss Flockton.



M. Smith del.

M F lith

DYSOXYLON BECKLERIANUM, C.DC.

No. 94.

Eucalyptus Luehmanniana, F.v.M.

Luehmann's Gum.

(Family MYRTACEÆ.)

Botanical Description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical Description.—Species, *E. Luehmanniana,* F.v.M., in *Fragm.* xi, 38 (Nov., 1879).

It may be described in the following words :—

A straggling tall shrub or small tree, rarely exceeding a height of 15 feet to 20 feet, or a stem-diameter of 3 inches ; the stem smooth, and the timber pale-coloured.

This species is glaucous, even nearly white. At the same time it imperceptibly passes into a non-glaucous form. The branchlets are angular, and the species is coarse—peduncles, fruits, leaves, &c., being alike large.

Juvenile leaves coarse, up to 7 inches long by 4 inches wide ; the resemblance to those of *E. hæmastoma* is striking.

Mature leaves distinctly falcate, up to 8 inches by 1½ inch, coriaceous, edges thickened, marginal vein usually at a little distance from the edge.

Peduncles very much flattened. I have specimens which spread out upwards so much that they are ½ inch wide at the place of attachment of the inflorescence. Top of peduncle quite broad and fleshy, in which the pedicels are articulate.

Buds angular, pointed.

Calyx-tube.—The calyx often tapers into a widely-expanded lobe, which is articulate on a broad-topped common peduncle ; usually seven flowers in a head

Operculum, double operculum or large calyptra-like bracts enveloping the whole head of flower-buds, and only thrown off when the individual flower-buds are nearly ready to throw off their own opercula.

Fruit, often pale-brownish and glossy, five-celled, corrugated—partly due to drying ; the rim slightly projecting.

Botanical Name.—*Eucalyptus,* already explained (see Part II, p. 34) ; *Luehmanniana,* in honour of J. G. Luehmann, for many years assistant to the late Baron von Mueller, and afterwards Curator of the Melbourne Herbarium. (See Part XIX, page 179, of this work.)

Vernacular Names.—The typical species is, as has been already stated, but a tall shrub or small tree. On the Blue Mountains, however, it attains the dignity of a large tree (named variety *altior,* Deane and Maiden). There it is known and cut commercially as "Mountain Ash" ; but it must not be confused with the true Mountain Ash of New South Wales, known to botanists as *Eucalyptus Sieberiana.* Variety *altior,* which is found in the valleys of the higher parts of the Blue

Mountains, or at the foot of cliffs in fairly good soil, is a straight-growing, tall, White Gum, with a little rough bark at the butt, and with long ribbons on the lower part of the trunk. Hence I have heard the tree called "Ribbon Gum," but is not to be confused with *E. viminalis*, the species that usually bears that common name. It is simply a giant form of *E. Luehmanniana*, exhibiting that species in its best development. The Mountains form is sometimes known as "Yellow Gum" and "White Gum."

Synonyms.—

1. *E. stricta*, Sieb. var. *Luehmanniana*, F.v. M
2. *E. virgata*, Sieb. var. *Luehmanniana*, F.v.M.
3. *E. rigida*, Sieb. var. *Luehmanniana*, F.v.M.

VAR. *altior*, DEANE AND MAIDEN.

4. *E. oreades*, R. T. Baker.
5. *E. virgata*, Sieb. var. *altior*, Deane and Maiden.

Leaves.—Messrs. Baker and Smith ("Research on the Eucalypts") give the following notes on the oil of *E. oreades* :—

Specific gravity at 15° C.	Specific rotation $[\alpha]_D$.	Saponification number.	Solubility in alcohol.	Constituents found.
0·8869	–25·6°	8·12	1 vol. 80%	Phellandrene, eucalyptol, peppermint ketone, sesquiterpene, eudesmol.

Timber.—Only the Blue Mountains form becomes a timber-tree, and it is used for rails and such-like purposes, for it is an excellent splitter. It is also used for building purposes. It does not come much into competition with the coast timbers, and hence its comparative value has not been very accurately determined.

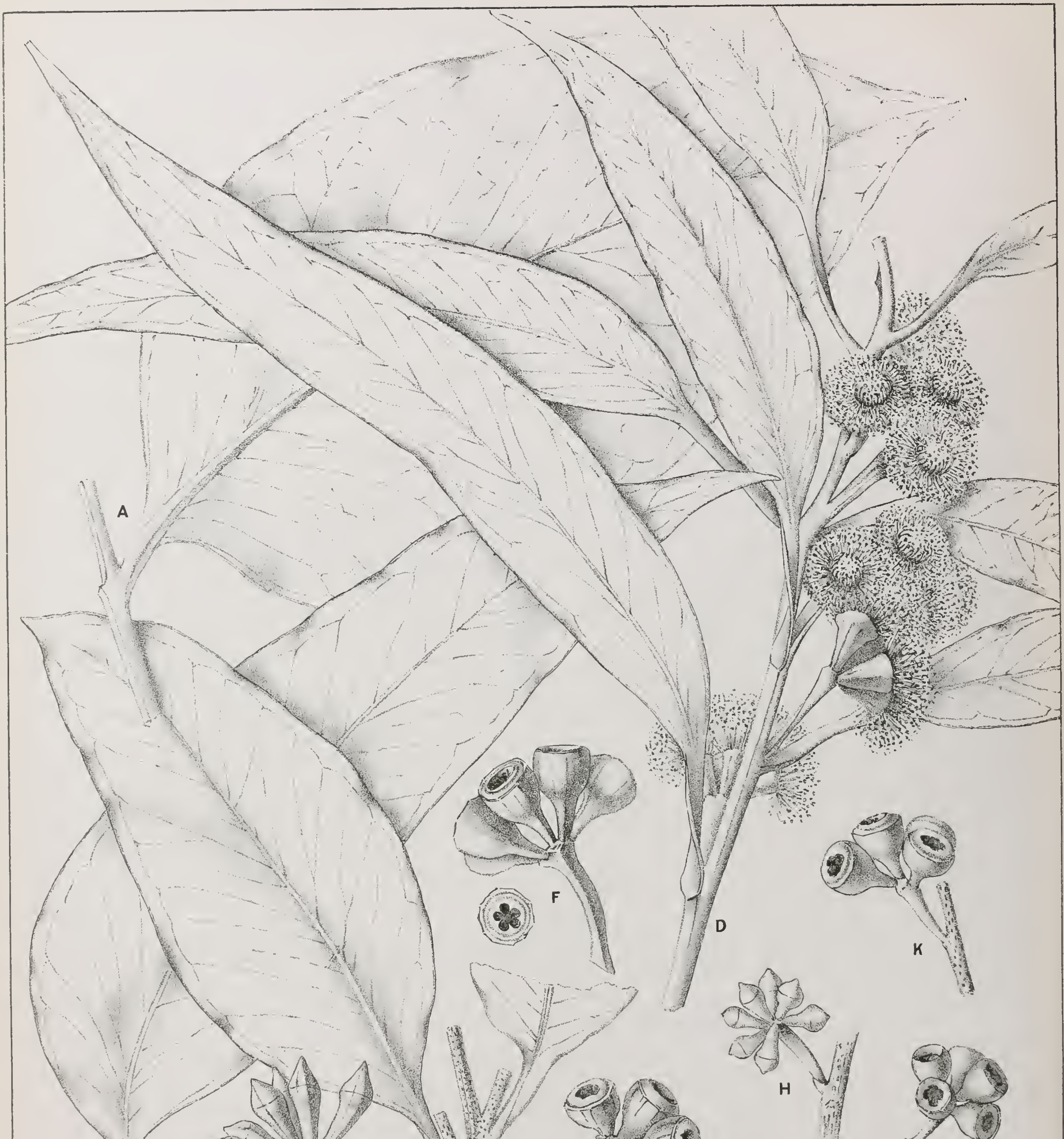
Size.—This has been already referred to.

Habitat.—The typical form is restricted, so far as is known at present, to the neighbourhood of Port Jackson and of the National Park (a few miles to the South). Mr. R. H. Cambage has collected it as far north as Berowra; I do not know a more northerly locality.

VARIETY *altior*.

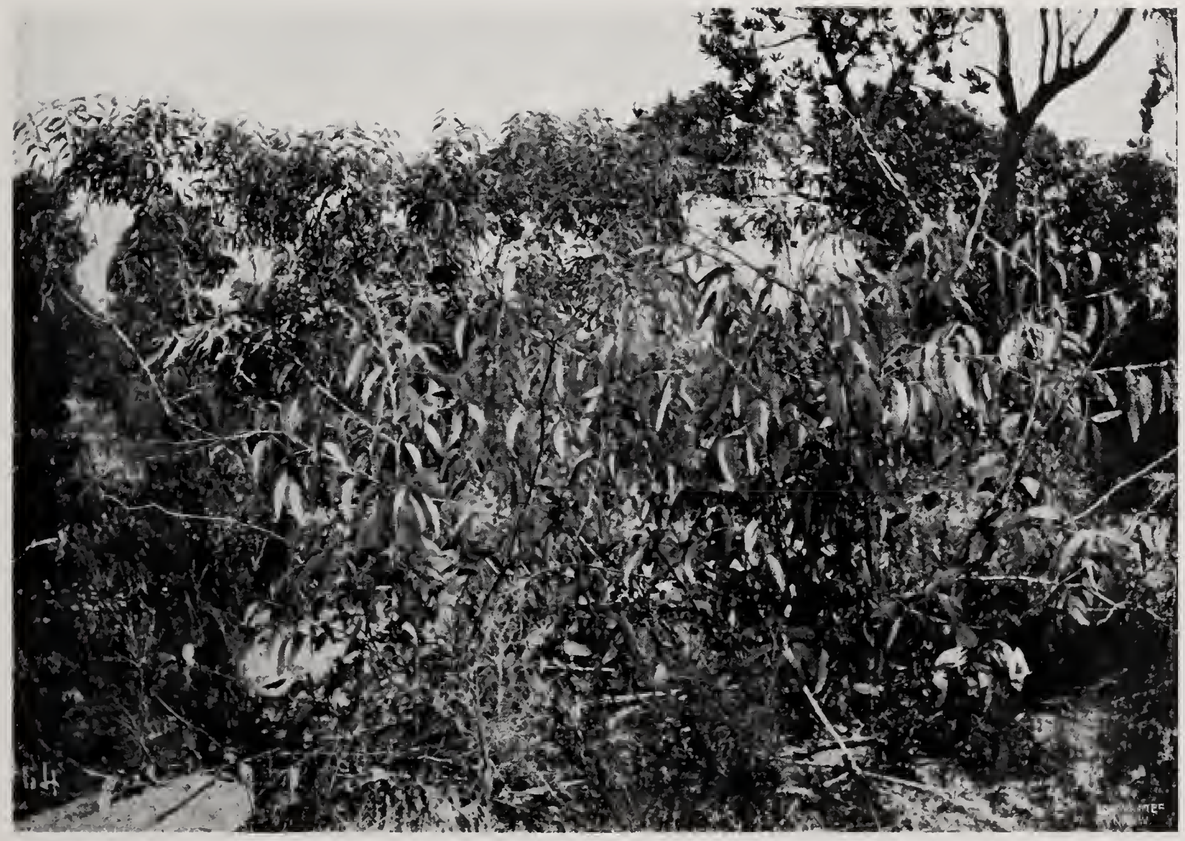
Found in the valleys or on the taluses of the hills of the Blue Mountain Range from Springwood higher.

Also at Mount Warning, near the Queensland border, at an altitude of over 3,000 feet (W. Forsyth). A tree there of 30-40 feet. So far I do not know any connecting localities; these should be looked for.



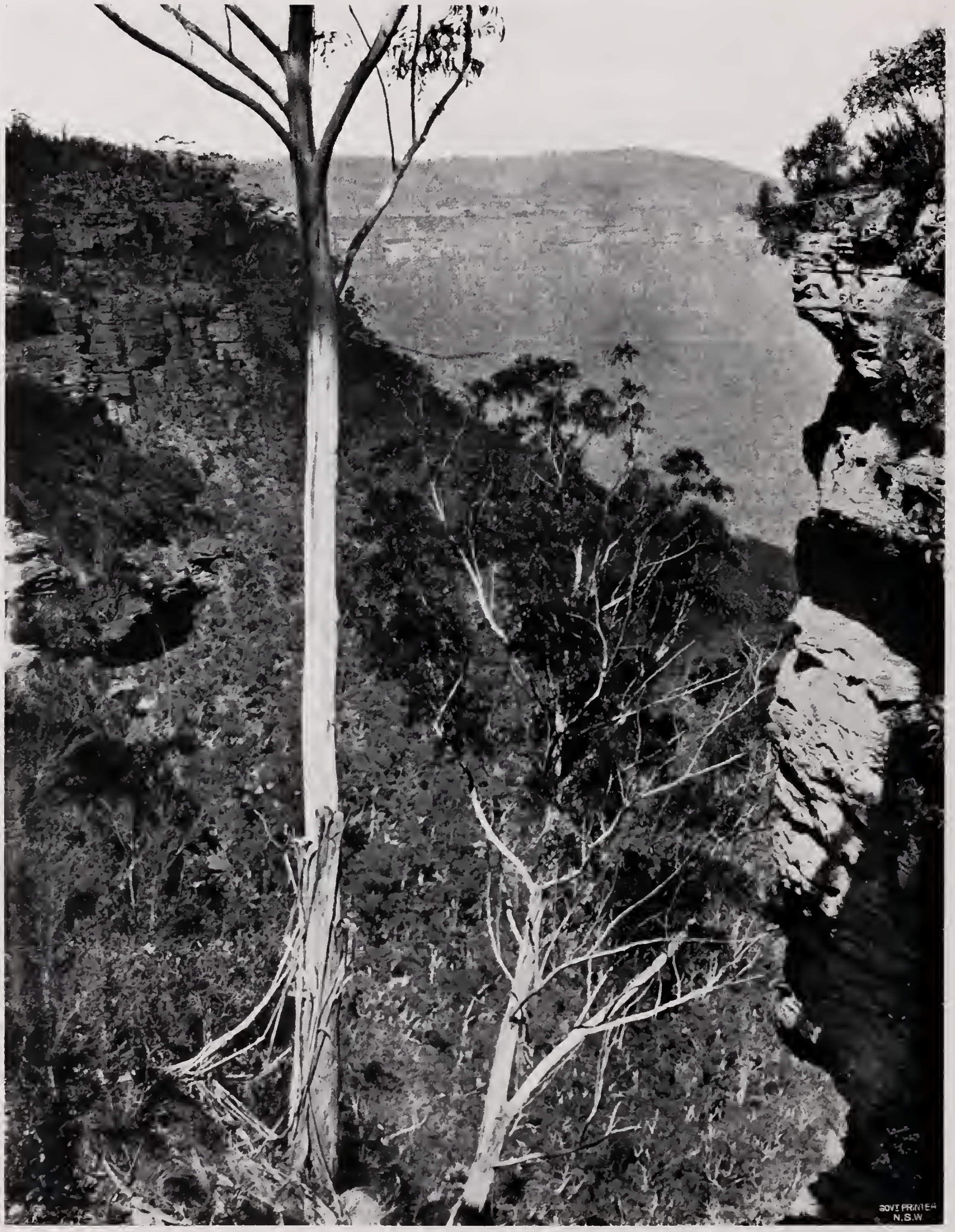
LUEHMANN'S GUM.

Eucalyptus Luehmanniana, F.v.M.



W. Forsyth, photo.

Eucalyptus Luehmanniana, F.v.M. TYPE FORM. NATIONAL PARK, SYDNEY.



Kerry, photo.

Eucalyptus Luehmanniana, F.v.M. VARIETY *altior,* DEANE AND MAIDEN.

MEDLOW HYDRO BLUE MOUNTAINS, N.S.W.

EXPLANATION OF PLATE 98.

Typical *E. Luehmanniana.*

A. Leaf in the juvenile or intermediate stage.

B. Leaf a stage younger, still in the opposite stage. Note the oil dots on the stalk (rhachis).

N.B.—There is no difference, or none that pictorial art can indicate, between the normal species and its variety at this stage.

C. Mature leaf.

D. Flowering twig.

E. Cluster of buds (note the broad flower stalk).

F. Cluster of fruits.

G. Cluster of fruits (smaller size).

(All the above from National Park.)

VARIETY *altior.*

H. Cluster of buds.

K. Cluster of ripe fruits (note the oil dots).

L. Cluster of unripe fruits.

(H-L from Mount Wilson, Blue Mountains.)

Photograph of a thicket of *E. Luehmanniana* in the National Park.

Photograph of a tree (the large Ribbony Gum in the foreground) of variety *altior*, from the Sentinel Pass, Medlow Bath Hydro, Blue Mountains.

No. 95.

Acacia aneura, F.v.M.

The Mulga.

(Family LEGUMINOSÆ : MIMOSÆ.)

Botanical Description.—Genus, *Acacia*. (See Part XV, p. 103.)

Botanical Description.—Species, *A. aneura*, F.v.M., in *Linnæa*, xxvi, 627, and *Fragm.* iv, 8.

A shrub or small tree, often hoary, with a very minute pubescence; branchlets terete, or nearly so.

Phyllodia narrow-linear, obtuse, or with a recurved or oblique callous point, usually flat, but thick, 1½ inch to 3 inches long, 1 inch to 1½ lines broad, but varying from short and narrow-oblong to very narrow and almost terete, without conspicuous nerves, but finely and obscurely striate under a lens.

Spikes shortly pedunculate, ⅓ inch to ¾ inch long.

Flowers mostly 5-merous.

Sepals very narrow, linear, spathulate.

Petals smooth.

Pod thin, flat, obliquely oblong, very obtuse, narrowed at the base, 1 inch to 1½ inch long, about 4 lines broad, the sutures edged with a narrow wing.

Seeds ovate, oblique or transverse; funicle with two or three short folds, expanded into a small membraneous aril under the seed (B.Fl. ii, 402).

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *aneura*, from two Greek words—*a*, not, and *neuron*, a nerve—in allusion to the veins or nerves of the leaves (phyllodes), "without conspicuous nerves, but finely and obscurely striate under a lens."

Vernacular Name.—"Mulga," the chief ingredient of Mulga scrub, so called from the Mulga, or long, narrow shield of wood made by the aborigines out of Acacia wood.

Aboriginal Name.—"Mulkathandra" is the name given to the seeds by the Dieyerie tribe, of Cooper's Creek, according to Gason. (Quoted by Brough Smyth, *Aboriginals of Victoria*, i, 223.) "Malka" of certain Lake Eyre tribes (Howitt and Siebert).

Leaves.—The leaves, or, rather, phyllodia—for, in strictness, they are not true leaves, but structurally expansions of the leaf-stalks—form excellent food for stock; in fact, some people call the plant the "king of fodders," and it has been so much appreciated that it is now scarce in many districts where it was once plentiful. Sometimes this plant is exempted in certain districts from the operations of licenses to cut timber. It is a matter for regret that so valuable a fodder plant should require to be cut for timber at all, and it is to be hoped that increased vigilance will be shown on the part of homestead lessees and others, in their own interests, in conserving the Mulga. Mulga should never be cut down, except when absolutely necessary—it should only be pollarded or lopped; and if these operations be performed by careful men no real harm to the tree will result. One reason why the tree is becoming extinct in some areas is because the seedlings are eaten out by stock. This is a matter for regret, and, of course, the only way of guarding against this is to protect as many of the seedlings as possible until they are able to take care of themselves. It does not appear to be known to some dwellers of the more highly-favoured coast districts that in some seasons in parts of the West there is practically no grass at any period of the year, and that stock not only feed on scrub-plants such as the Mulga, but actually thrive thereon.

Note that there is a normal or Broad-leaved Mulga, and a Narrow-leaved Mulga, but that there is no botanical difference between them.

Following is an interesting note on Mulga, from the *Sydney Mail*, in 1890, written by an author whose name I have lost:—

"We now come to the edible scrubs, which often, of necessity, take their place amongst the fodder plants of Australia. Amongst these, the most widespread and perhaps the best known is the Mulga. On the southern flats of the main inland rivers, Mulga grows as a low bushy tree, the branches commencing to spread some 6 feet from the ground. In the north, it grows with a tall straight stem, 20 feet high, and is, therefore, quite unavailable as a fodder plant. On the west coast, and in the interior, it is a true scrub, attaining a good height, but branching out only a foot or two from the ground. Both here and on the lower courses of the rivers, it grows in open forest; to the north it is a thick scrub almost too dense to ride through. It is not by any means a barren scrub, good feed, both grass and herbage, being generally found within its limits. As a rule, it is only available for cattle, although the species found in Western Australia grows low enough for sheep to feed on. The utility of horns to cattle when scrub-feeding is soon apparent. An old bullock will twist down saplings and break down limbs of trees, and obtain a good meal where a polled beast would go hungry. Mulga is likely to become an important factor in the settlement of the interior, as it forms good fodder for camels, and, as they are certainly to be the beasts of burden and draught over the long dry stages of the heart of Australia, until superseded by steam and iron, the universal presence of the Mulga will prove of some service. Mulga affects all kinds of soil. It is to be found on hard, gravelly ironstone ridges, on the dreaded sand-hills of the desert, and on the alluvial flats of the inland rivers."

Following is an analysis of the leaves by Mr. F. B. Guthrie (*Agric. Gaz., N.S.W.*, Oct. 1899):—

Water.	Ash.	Fibre.	Ether extract (oil, &c.)	Albumenoids.	Carbohydrates.	Nutrient value.	Albumenoid ratio.	Tannin (oak bark).
39·06	3·60	29·90	2·55	9·06	15·83	30¾	1 : 2½	1·8

In western New South Wales two kinds of galls are commonly found on these trees. One kind is very plentiful, very astringent, and not used, but the other while less abundant, is larger, succulent, and edible. These latter galls are called "Mulga apples," and are said to be very welcome to the thirsty traveller.

General Remarks on Mulga.

Mr. C. J. McMaster, Chairman of the Western Lands Board, has very kindly furnished the following general remarks on Mulga :—

Mr. D. W. F. Hatton, Inspector of Stock, stationed at Bourke, who has had many years practical experience in feeding stock upon Mulga, states :—

"There are four different kinds of Mulga in the Bourke district. *Umbrella Mulga*—so called because it somewhat resembles an open umbrella—grows on hard, stony ground, and attains a height of about 10 feet; it has a narrow leaf, and is a good stock food. *Broad-leaved Mulga* thrives best in the deeper and better soils in the valleys, between the stony ridges ; it grows about 15 to 20 feet high, but as a fodder tree does not rank as high as the umbrella or the yellow varieties. *Black Mulga* : The leaves are dark and narrow, and are shorter than the other narrow-leaved kinds, being only about 2 inches in length. It attains a height of from 15 to 20 feet. *Yellow Mulga* grows to about 20 feet high, and prefers sandy, red-soil ridges ; it is considered one of the best of the Mulgas for fodder purposes ; the leaf is comparatively broad, and has a yellow tinge.

"The leaves of all Mulgas are eaten by sheep and cattle, and the seeds, particularly, are relished and are very fattening ; but horses, unless bred in Mulga country, do not take kindly to it."

Mulga appears to be the most universally distributed fodder tree in the arid parts of Australia, and during times of extreme drought the limbs (with the exception of one or two of the leading ones) are cut off for the benefit of the starving stock.

In former years Mulgas have been destroyed on thousands of acres of land, because the precaution to leave at least one leading branch uncut was not observed ; but now that stock-owners realise that stock and rabbits eagerly devour young plants, and that, consequently, the supply of Mulga—the mainstay in times of drought—depends upon the proper treatment of the existing matured trees, they, as a rule, exercise the utmost care to conserve the trees as much as possible.

If Mulga is cut off at the stump it will not throw out new growth. In this respect it differs from nearly every other Western fodder-producing tree.

Seeds.—The seeds were eaten by blacks, and continue to form part of the food of some aborigines to this very day. I need scarcely say that they are astringent, and that they yield only a small proportion of starchy matter.

Bark.—A specimen of the bark of this tree from Ivanhoe, *viâ* Hay, N.S.W., yielded 4·78 per cent. of tannic acid, and 10 per cent. of extract. A narrow-leaved variety (there is a form with much narrower leaves than the other) from the same neighbourhood yielded 20·72 per cent. of extract, and 8·62 per cent. of tannic acid. The former is a deeply-furrowed, flaky, pulverulent bark, apparently from an old tree; average thickness, $\frac{3}{8}$ inch. The bark of the narrow-leaved variety is a thin, poor bark, not exceeding $\frac{3}{16}$ inch in thickness, moderately fissured, of a dark grey colour, sometimes nearly black. (*Proc. Roy. Soc. N.S.W.*, 1887, p. 32.)

A second sample of the normal species gave (*Proc. Roy. Soc. N.S.W.*, 1888, p. 271) 2·32 per cent. of tannic acid, and 12·12 per cent. of extract. It was from Tarella, Wilcannia; collected August, 1887; analysed August, 1888. It is a useless, flaky, dry-country bark.

Timber.—Excessively hard, dark brown, used by the aborigines for boomerangs, sticks to lift edible roots, shafts of spears, nulla-nullas, and jagged spear-ends (Mueller). It is highly irritating in flesh wounds. It makes excellent fencing posts, and in parts of western New South Wales it is very plentiful, and much appreciated. It is often used for bullock-yokes.

"In the absence of other timber, Mulga is now one of the principal trees burnt for charcoal near Cobar."—(*Cambage*, in *Proc. Linn. Soc. N.S.W.*, 1901, p. 321).

Exudation.—The Mulga yields a small quantity of soluble gum, similar in properties to that of good gum-arabic. It would be commercially valuable if it were procurable in quantity.

Size.—Often a tall shrub or small tree, and rarely more than 25 feet in height. It is often with a stem diameter of 9 to 12 inches.

Habitat.—Western Australia, through the other mainland States to Queensland. It is a native of the drier western parts of New South Wales. Its precise eastern boundaries are not yet defined.

Localities and collectors of some New South Wales specimens in the National Herbarium, Sydney, are:—

Broken Hill (A. C. Loder); Paldrumatta Bore and Mount Browne (P. Corbett); Mount Hope (J. L. Boorman); near Cobar (J. V. d'Apice), both broad and narrow leaf; North Bourke (A. Murphy); Pera Bore (W. W. Froggatt); Tarcoon (J. L. Boorman): Byrock (H. Deane); Coolabah (R. W. Peacock); Nyngan (E. F. Rogers).

"Up to a height of 25 feet. Wood very hard, and used greatly by natives for weapons, etc. Capable of high polish."—Ivanhoe, *viâ* Hay (K. H. Bennett).

Propagation.—Readily by seed. It even grows in the coast districts with a little care. It is a pity that it is not more conserved and planted.

EXPLANATION OF PLATE 99.

A. Flowering twig of the broad leaved form.
B. Spike of flower-buds.
C. Individual bud.
D. Flower.
E. Flower, opened out, showing—
    (*a*) Calyx.
    (*b*) Corolla.
    (*c*) Stamens.
    (*d*) Pistil.
F. Stamens.
G. Bract.
H. Flowering twig of the narrow-leaved form.
K. Pods.
L. Seed.

The broad and the narrow-leaved forms seem to run into each other. There is no sharp botanical distinction between them.

Photograph of Mulga tree on Yantara (north-west corner of New South Wales), with 3 feet of the surface soil blown away.—(C. J. McMaster, President, Western Lands Board.)

Photograph of a Mulga tree between Barringun and Enngonia.—(Kerry.)

Mulga at Afghan's Grave, Burke and Wills' Expedition.—Mr. C. J. McMaster, who took the photograph, kindly furnishes the following particulars :—

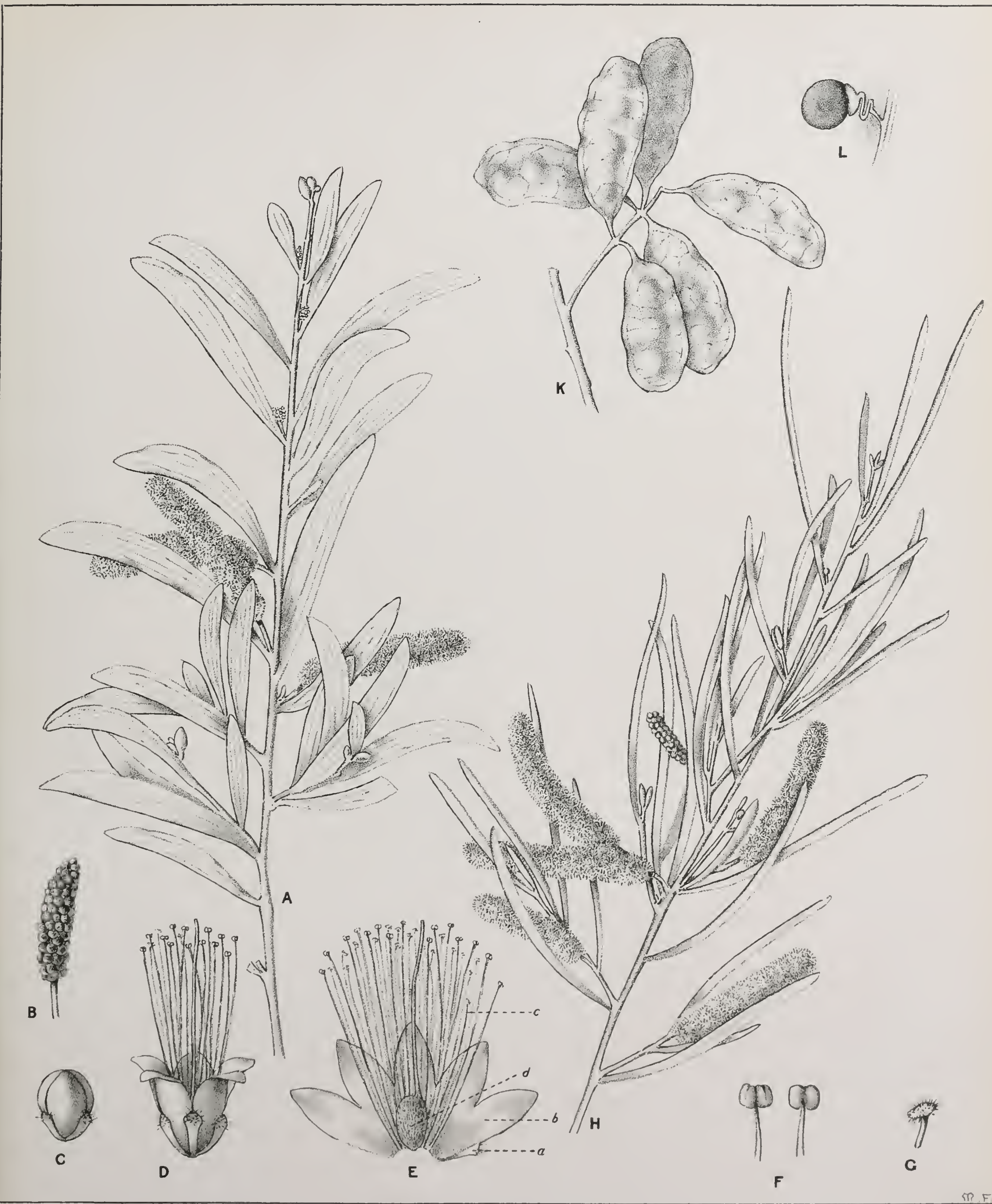
"The Mulga tree in the middle distance is characteristic of the Mulgas in the Scrope's and Barrier Ranges.

"The stones in the foreground indicate the position of what is known as 'The Afghan's Grave,' and is locally said to be the burial-place of one of the camel-drivers attached to the Burke and Wills' Exploration Expedition. The grave is situated a short distance from the bank of Bilpa Creek in Scrope's Range, N.S.W., where Burke camped on the 21st of October, 1860.

"I have been unable to discover a reference to the death of any of the party at this place in the published accounts of that ill-fated expedition."

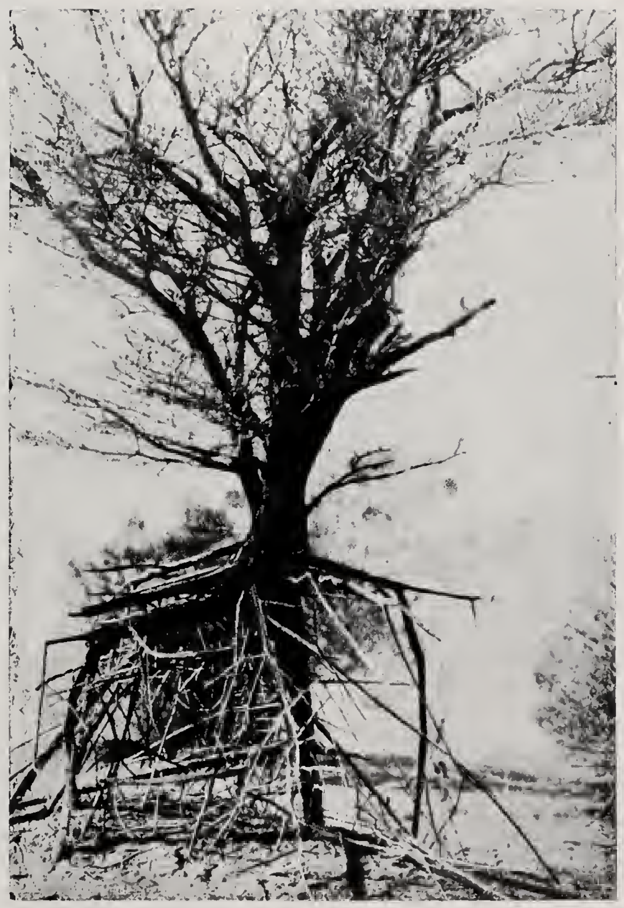
Three photographs of Mulgas on Fort Bourke, near Bourke, N.S.W.—(These photographs, taken by Mr. C. J. McMaster, are all of normal-leaved Mulga, such as is figured A on the plate.)

Photograph of a Mulga (same locality and donor) with narrow and unusually long leaves.



MULGA AND NARROW-LEAVED MULGA.

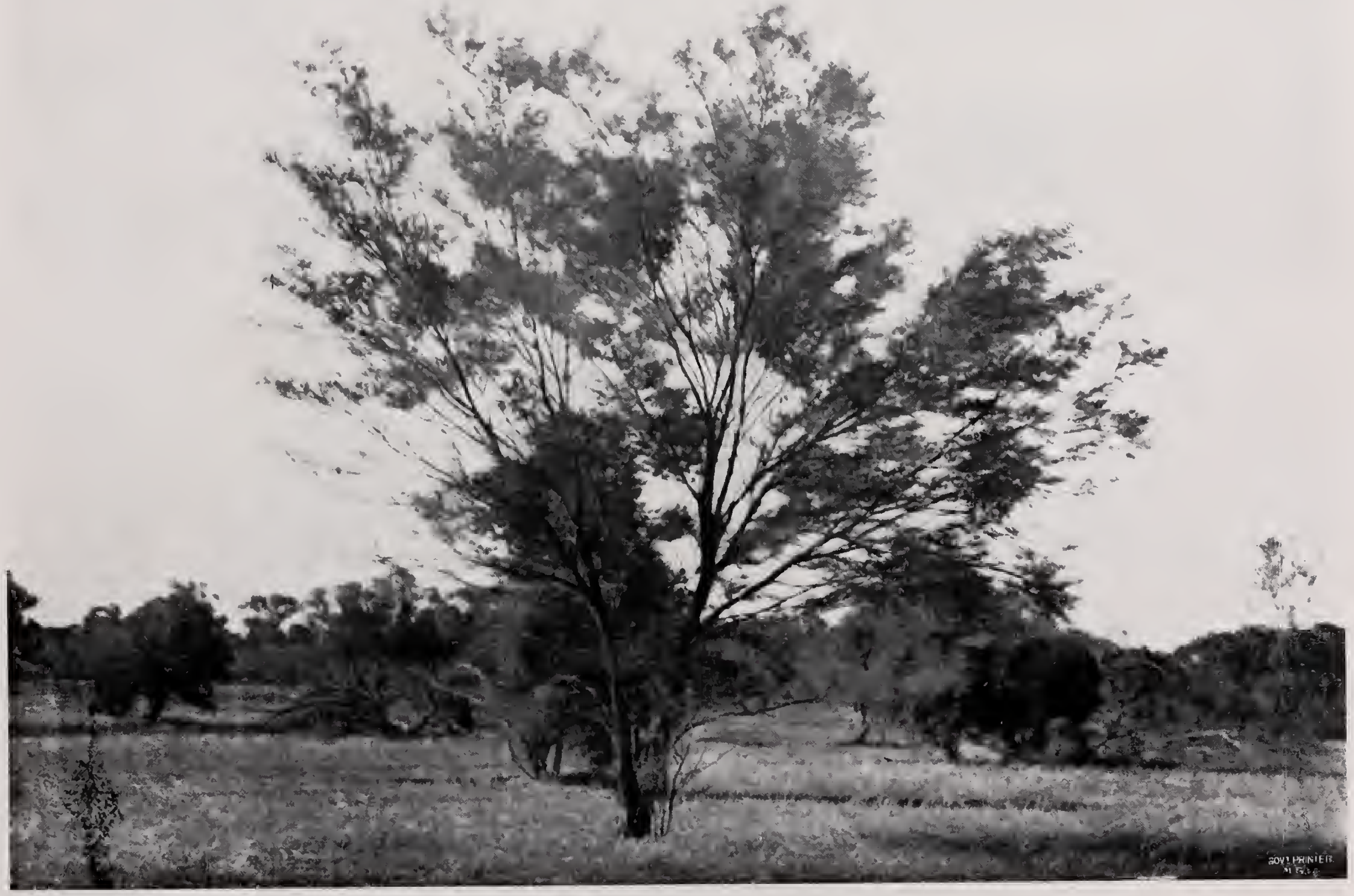
Acacia aneura, F.v.M.



C. J. McMaster, photo.

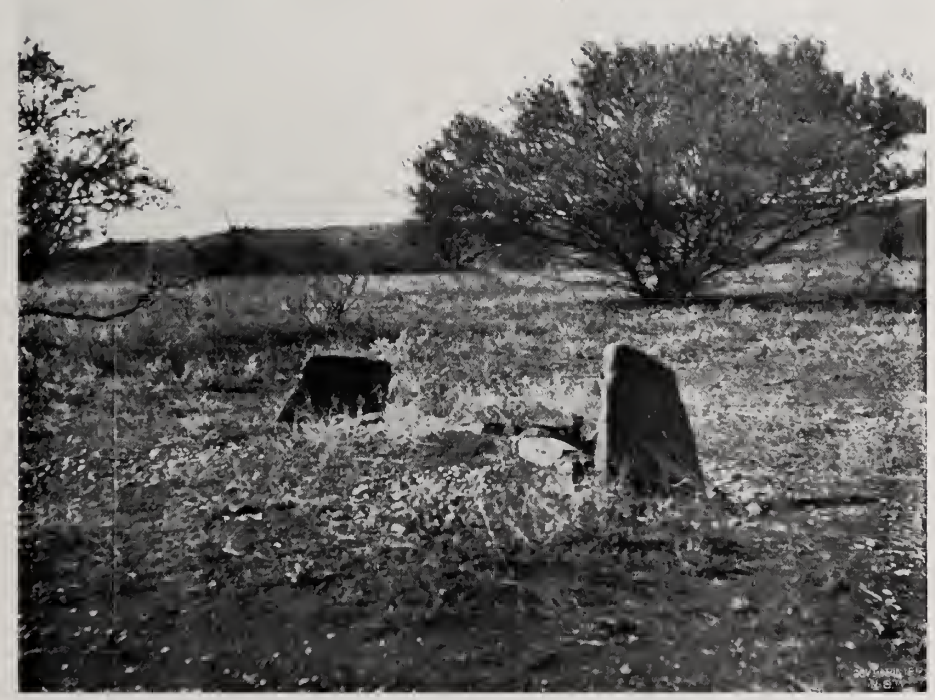
MULGA TREE ON YANTARA.

3 FEET OF THE SURFACE SOIL BLOWN AWAY.



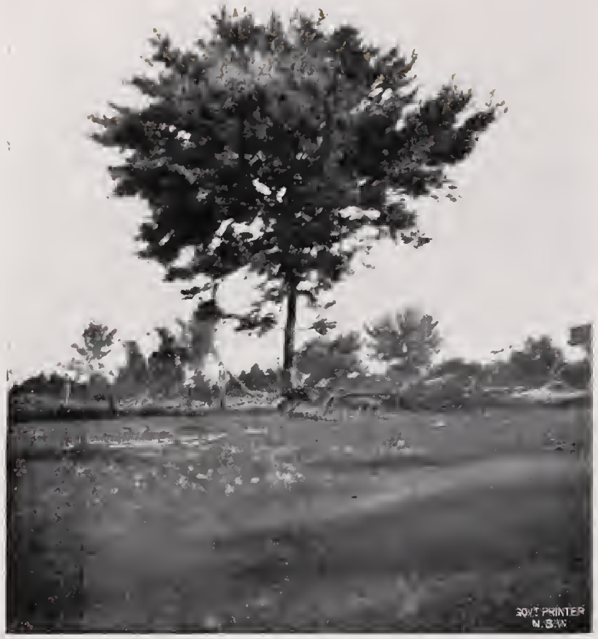
Kerry, photo.

MULGA. BETWEEN BARRINGUN AND ENNGONIA.

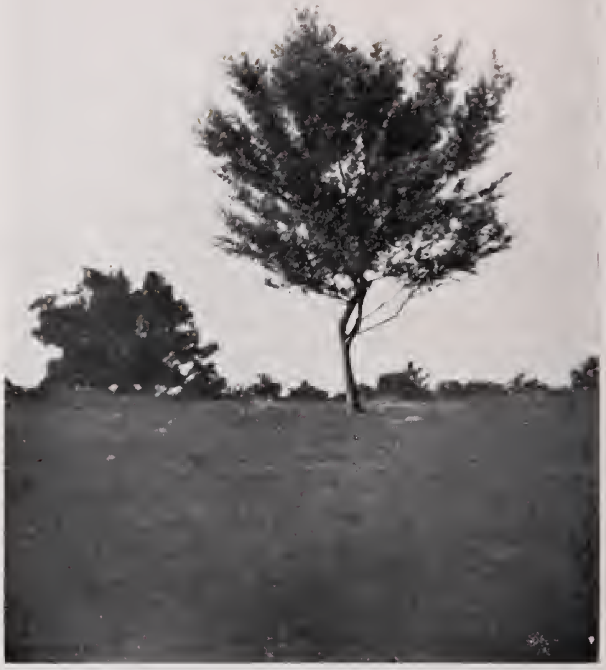


C. J. McMaster, photo.

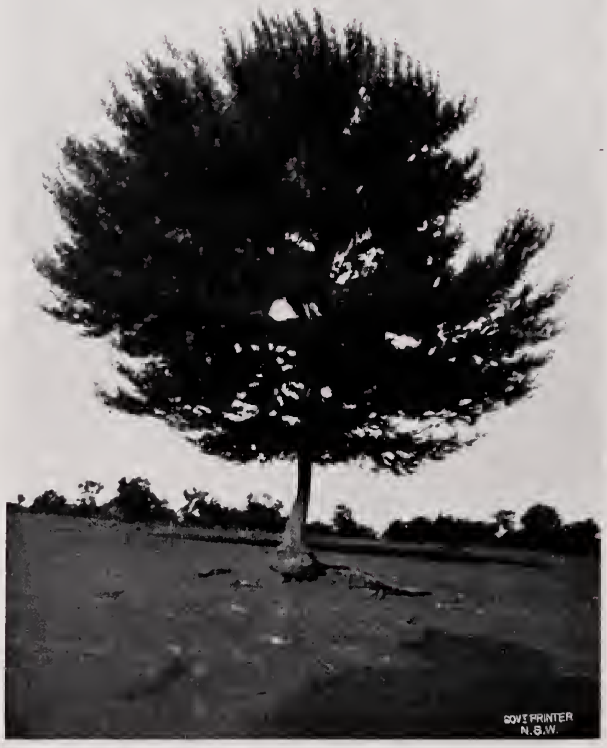
MULGA, AT AFGHAN'S GRAVE (BURKE AND WILLS' EXPEDITION).



C. J. McMaster, photo.

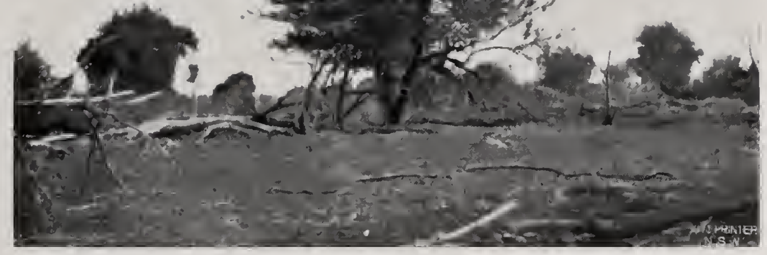


C. J. McMaster, photo.



C. J. McMaster, photo.

MULGAS ON FORT BOURKE, NEAR BOURKE, N.S.W.
(NORMAL FORM.)



C. J. McMaster, photo.

MULGA ON FORT BOURKE, NEAR BOURKE, N.S.W.
(WITH NARROW AND UNUSUALLY LONG LEAVES.)

No. 96.

Cryptocarya erythroxylon, Maiden and Betche.

(NEW SPECIES.)

The Red-wooded Cryptocarya.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya.* (See Part III, p. 72.)

Botanical description.—Species, *C. erythroxylon*, sp. nov.

A large and fine-looking tree, 12 or more feet in girth; the barrel is lengthy and exceptionally round. (W. Dunn.)

Leaves broadly lanceolate to ovate oblong (usually 3 to 4 inches long and 1½ inch wide), margin entire, undulate, coriaceous, dull green above, more or less glaucous underneath; penniveined, the secondary veins prominent; finely reticulate, especially prominent on the underside. The leaves crowded at the ends of the branches in young trees.

Flowers numerous, pedicellate, in thyrsoid panicles shorter or longer than the leaves, the upper ones often forming a large terminal panicle. Almost glabrous, less hairy than *C. microneura;* the panicle denser, and with more numerous flowers.

Perianth scarcely 1 line long, hoary pubescent, constricted about the middle; the segments about as long as the tube, or rather longer.

Staminodia.—The inner row cordate, the outer row irregularly spheroid.

Fruiting perianth ovate, rather pointed; shining black, about ¾ inch long by ⅝ inch broad.

Acacia Creek, Macpherson Range, N.S.W. (W. Dunn).

Affinities.—*C. erythroxylon* is nearest allied to *C. glaucescens*, but differs in the fruit, and minor characters; it is equally different distinguished from *C. microneura.* Thus we have:—

C. glaucescens.—Fruits always depressed; leaves frequently, but not always glaucous underneath; *wood white.*

C. microneura.—Fruits globular; leaves green on both sides, very prominently reticulate; *wood white.*

C. erythroxylon.—Fruits ovate, rather pointed; more elongated than the preceding; leaves more or less glaucous underneath, much reticulate; *wood red.*

They may be regarded as forms of one species, *i.e., C. glaucescens* (Bentham's view), but as *C. microneura* has been separated again, we cannot logically unite *C. erythroxylon* with *C. glaucescens.*

We, indeed, think Bentham has included too many forms under *C. glaucescens*, some of which are at least strongly marked varieties.

Botanical Name.—*Cryptocarya*, already explained (see Part III, p. 73); *erythroxylon*, from two Greek words, *erythros*, red, and *xylon*, wood, the wood being of a reddish colour, which is unusual in *Cryptocarya* timbers so far as we are aware. This character sharply distinguishes it from the New South Wales species mostly closely related to it.

Vernacular Names.—I know of none, and therefore propose the name "Red-wooded Cryptocarya" quite provisionally. Mr. Dunn looks upon it as a Bolly Gum.

Aboriginal Names.—I know of none.

Leaves.—Mr. Dunn, speaking of the type locality, writes:—"The leaves are a little like *Cryptocarya microneura*, but the trees are alike in no other way; the latter, here, is quite a small tree. The smell of the wood is very characteristic and nearly identical in smell with *Litsea dealbata*. The leaves are not crowded at the ends as in *Litsea* in old trees." Of course the timber of *C. microneura* often attains a large size; the comparative size of the trees may be a strictly local indication.

Fruits.—These afford a useful character, distinguishing this tree from those species likely to be confused with it.

Timber.—This timber is sawn in the mills. It has a reddish colour. It is a softwood, and is obviously adapted for many uses to which a softwood is put.

> "It is a sweet-smelling wood, and I am sure of great commercial value. It has a nice appearance, and should be adapted for many useful purposes."—(W. Dunn.)

We, of course, know very little of this tree or timber at present.

Size.—"Grows large and straight."—(W. Dunn.)

Habitat.—This tree was discovered by Mr. W. Dunn, near Acacia Creek, Macpherson Range, New South Wales. He afterwards wrote: "I think there is a goodly amount of it in Forest Reserve No. 37,004, Parish of Beaury."

It is more than probable that it will be found in Queensland.

This is a new tree, described in this work for the first time; and I ask my correspondents to be on the look-out for it.

APPENDIX.

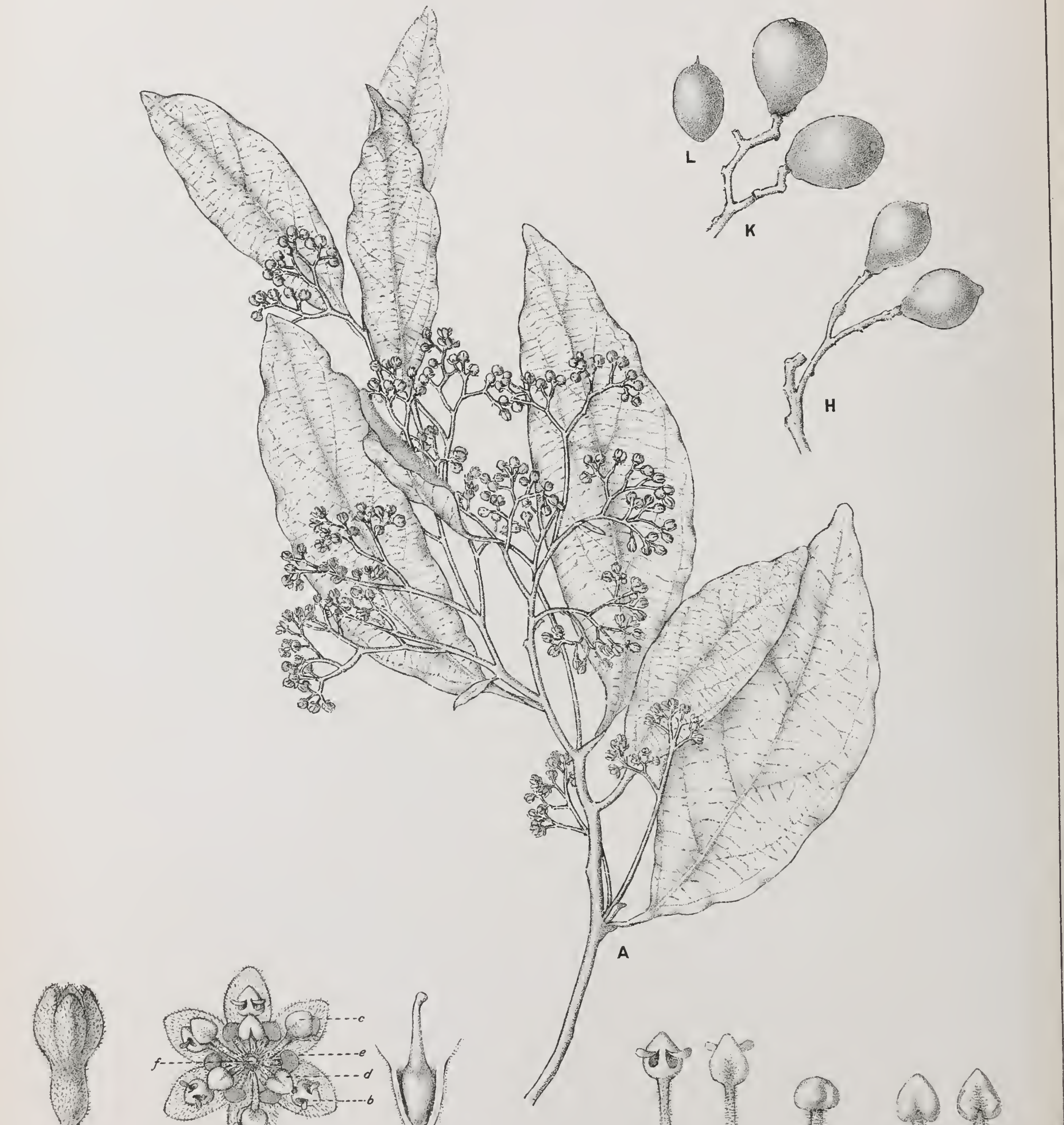
The following three timbers were exhibited in the New South Wales Courts at the Exhibitions stated:—

A.—No. 228 (Paris Exhibition, 1854); No. 119 (London Exhibition, 1861).

Cryptocarya sp.

Called Flindosa at Brisbane Water. Diameter in inches, 36–72; height in feet, 100–150. (Collected by Mr. Edward Hill.)

A tree of noble dimensions, in general habit resembling *Cryptocarya obovata*, but with smaller leaves; wood soft, light; in request for decking small craft. The local name would seem to be a corruption of Flindersia, with which, however, it has no affinity.



RED-WOODED CRYPTOCARYA.

Cryptocarya erythroxylon. Maiden and Betche.

B.—No. iii of the Northern Timbers. (London Exhibition, 1862.)

Cryptocarya sp.

"Gooroie" of the aborigines of the Richmond River.

"A tree of general occurrence in the cedar brushes; timber hard and durable, and may be obtained of considerable size, but not used by settlers."

C.—No. x of the Northern Rivers. (London Exhibition, 1862.)

Cryptocarya sp.

"Menem" of the blacks at Ballina, Richmond River.

"A magnificent tree, from 80 to 100 feet in height, and 3 to 4 feet in diameter. Abundant in the brushes. Timber of apparent value, but not used for any purposes by settlers."

Can anyone say what these trees are, or send me flowering or fruiting twigs?

Dr. T. L. Bancroft wrote in *Proc. Intercol. Med. Cong*, 1890, as follows:—

> "The genus Cryptocarya contains a curare-acting principle. It is, I believe, an alkaloid closely resembling curarine. Professor Fraser has promised to experiment with this poison, so before long something definite about it may be known. There are several species of Cryptocarya in South America, and notably one, *C. guianensis.* It is Guiana where curare is obtained, and it is to the interest of the natives, who collect this substance, to keep its source secret. It seems that, to inquirers, the natives always point to a Strychnos (chiefly *Strychnos guianensis*—see Wittstein's *Organic Constituents of Plants*), as the tree from which they obtain the curare. Some samples of curare contain curarine, brucine, and strychnine; other samples contain only curarine, which fact seems to point to the juice of a Strychnos being added at times to enhance the poisonous nature of curare."

The barks of the New South Wales species of *Cryptocarya* offer an interesting subject for experiment by New South Wales chemists.

EXPLANATION OF PLATE 100.

A. Flowering branch.
B. Young flower.
C. Flower, opened out, showing—
    (*a*) Perianth (calyx).
    (*b*) Stamens, outer row.
    (*c*) ,, inner row.
    (*d*) Staminodia, inner row.
    (*e*) ,, outer row.
    (*f*) Stigma.
D. Anthers, back and front.
E. Staminode, outer row.
F. ,, inner row
G. Pistil.
H. Young fruits.
K. Mature fruits.
L. Seed.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets):—

Eucalyptus amygdalina, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coccifera*, Hook., f. (V).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber. (V).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

---

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1907.

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39 —The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—The Mugga ; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.).

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

PART XVI (ISSUED JUNE, 1905).

No. 64.—The Weeping Myall (*Acacia pendula*, A. Cunn.).
No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—The Drooping She-Oak (*Casuarina stricta*, Ait.).
No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—The Cudgerie (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—The Giant Gum Tree (*Eucalyptus regnans*, F.v.M.).
No. 73.—The Black She-Oak (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—The Yellow-wood (*Flindersia Oxleyana*, F.v.M.).
No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
No. 76.—The Bull Oak (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

PART XX (ISSUED JULY, 1906).

(*Sixteen Plates.*)

Volume III.

PART XXI (ISSUED AUGUST, 1906).

No. 77.—THE CROW'S ASH OR BOGUM BOGUM (*Flindersia Bennettiana*, F.v.M.).

(Two Plates.)

No. 78.—THE BLACKBUTT OR PEPPERMINT (of New England) (*Eucalyptus Andrewsi*, Maiden).

No. 79.—THE THREADY-BARKED OAK (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII (ISSUED FEBRUARY, 1907).

No. 80.—THE HILL FLINDERSIA (*Flindersia collina*, F. M. Bailey).

(Two Plates.)

No. 81.—THE BROAD-LEAVED MESSMATE (*Eucalyptus obliqua*, L'Hérit.).

No. 82.—THE CEDAR WATTLE (*Acacia elata*, A. Cunn.).

PART XXIII (ISSUED MARCH, 1907).

No. 83.—THE ROSEWOOD (*Dysoxylon Fraseranum*, Benth.).

No. 84.—THE WHITE-TOP MESSMATE (*Eucalyptus vitrea*, R. T. Baker).

No. 85.—THE ACACIA DECURRENS GROUP OF WATTLES—BLACK, GREEN, AND SILVER WATTLES (*Acacia decurrens*, Willd.).

(Two Plates.)

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No. 87.—BASTARD TALLOW-WOOD (*Eucalyptus Planchoniana*, F.v.M.).

No. 88.—THE MOUNTAIN HICKORY (*Acacia penninervis*, Sieb.).

(Two Plates.)

PART XXV (ISSUED JUNE, 1907).

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No. 92.—THE WHITE CEDAR (*Melia Azedarach*, L., var. australasica, C. DC.).

THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 7.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

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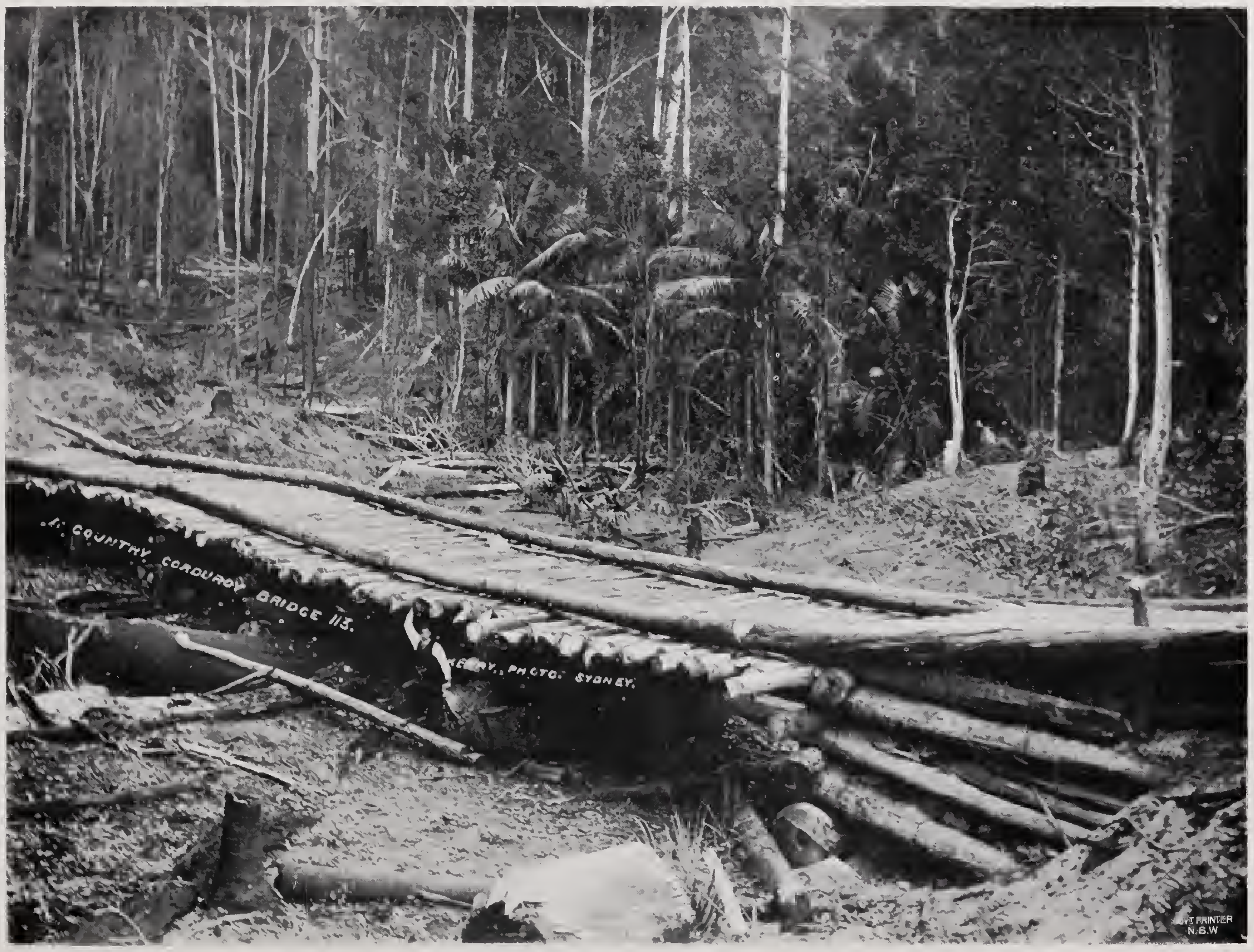
No. 38.—The Queensland Nut (*Macadamia ternifolia*, F.v.M.).



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CORDUROY BRIDGE THROUGH VIRGIN FOREST, GOSFORD, N.S.W.

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXVII.

Published by the Forest Department of New South Wales, under authority of
The Honourable the Secretary for Lands.

Published by Authority of
THE GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

Sydney:
WILLIAM APPLEGATE GULLICK, GOVERNMENT PRINTER.

1907.

PRICE, 1/- per Part, or 10/- per dozen Parts, payable in advance.

*1630—A

No. 97.

Dysoxylon Muelleri, Benth.

The Red Bean.

(Family MELIACEÆ).

Botanical description.—Genus, *Dysoxylon.* (See Part XXIII, p. 27.)

Botanical description.—Species, *Muelleri,* Benth., in B.Fl. i., 381 (1863).

A tree of 60 feet or more, glabrous or nearly so, except the very young shoots and inflorescence.

Leaves.—1 to 2 feet long ; leaflets 11 to 21, from ovate to almost lanceolate, shortly acuminate, 3 to 6 inches long, very oblique at the base, one side rounded, the other truncate and shorter, almost coriaceous.

Panicles pyramidal, $\frac{3}{4}$ to 1 foot long, much-branched and many-flowered.

Calyx cupular, $\frac{1}{2}$ to $\frac{3}{4}$ line long, pubescent, 4-lobed.

Petals 4, nearly glabrous, about 5 lines long, adhering to the staminal tube to about two-thirds their length.

Staminal tube truncate and minutely crenulate, hirsute outside.

Disc narrow-tubular, nearly half as long as the staminal tube.

Ovary hirsute, 4-celled, with 1 ovule in each cell.

Fruit only seen very young, soon becoming glabrous.* (B.Fl. i, 381.)

Botanical Name.—*Dysoxylon,* already explained (see Part XXIII, p. 30) ; *Muelleri,* in honor of the late Baron von Mueller.

Vernacular Names.—It bears various names, viz., "Pencil Cedar" and "Turnip Wood," both given from the smell of the wood. "Red Bean" is, however, the commonest name, and one not applied to any other tree, so far as I know. It gets its name because it is supposed to resemble the timber of the Black Bean (*Castanospermum australe*) except in colour, which is red, but the name is a little far fetched.

Aboriginal Name.—"Mocoundie" of the aborigines of the Clarence and Richmond, N.S.W., according to the late Mr. Charles Moore.

Mr. F. M. Bailey quotes Mr. Schneider in giving the name as "Kedgy Kedgy" at Nerang, South Queensland.

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*See "Fruits," p. 116.

Synonym.—*Synoum Larkneri*, Moore, No. LI, Catalogue of Northern Woods of New South Wales for the London Exhibition of 1862.

Fruits.—Bentham says he has only seen the fruits "very young, soon becoming glabrous." I have figured the fruits on Plate 101; they are not fully ripe, at the same time they can hardly be described as "very young." It will be observed that they are hairy. I have tried for years to get fully ripe fruits for figuring, without success. I hope correspondents will help me in the matter, and they can be figured in a later Plate.

Timber.—Following is the earliest account I can find of this timber:—

> "Plentiful. A fine tree, called by the aborigines by the same name as the Rosewood, No. 47, but from which it is very different. Timber red when fresh, without scent, similar in appearance and in the grain to the Cedar used for pencils, hence the name. The bark smells somewhat like a Swedish turnip. Employed in housework and general purposes."—(C. Moore, in Catalogue of Northern Woods, New South Wales, for the London Exhibition of 1862.)

Red Bean may be described as a scentless Rosewood, of a red colour, and possessing a neat figure. Both bark and sapwood have a strong, turnip-like odour when fresh; it departs on drying. It is often sold in Sydney as Cedar or Bastard Cedar, but it is heavier than that wood, and is of sufficient excellence to stand on its own merits. It is a good furniture wood, and has a quiet yet handsome figure that looks well under polish. It can be put to most of the uses that Spanish Mahogany is put. I have heard that it is considered valuable for the naves of wheels in the districts in which it grows.

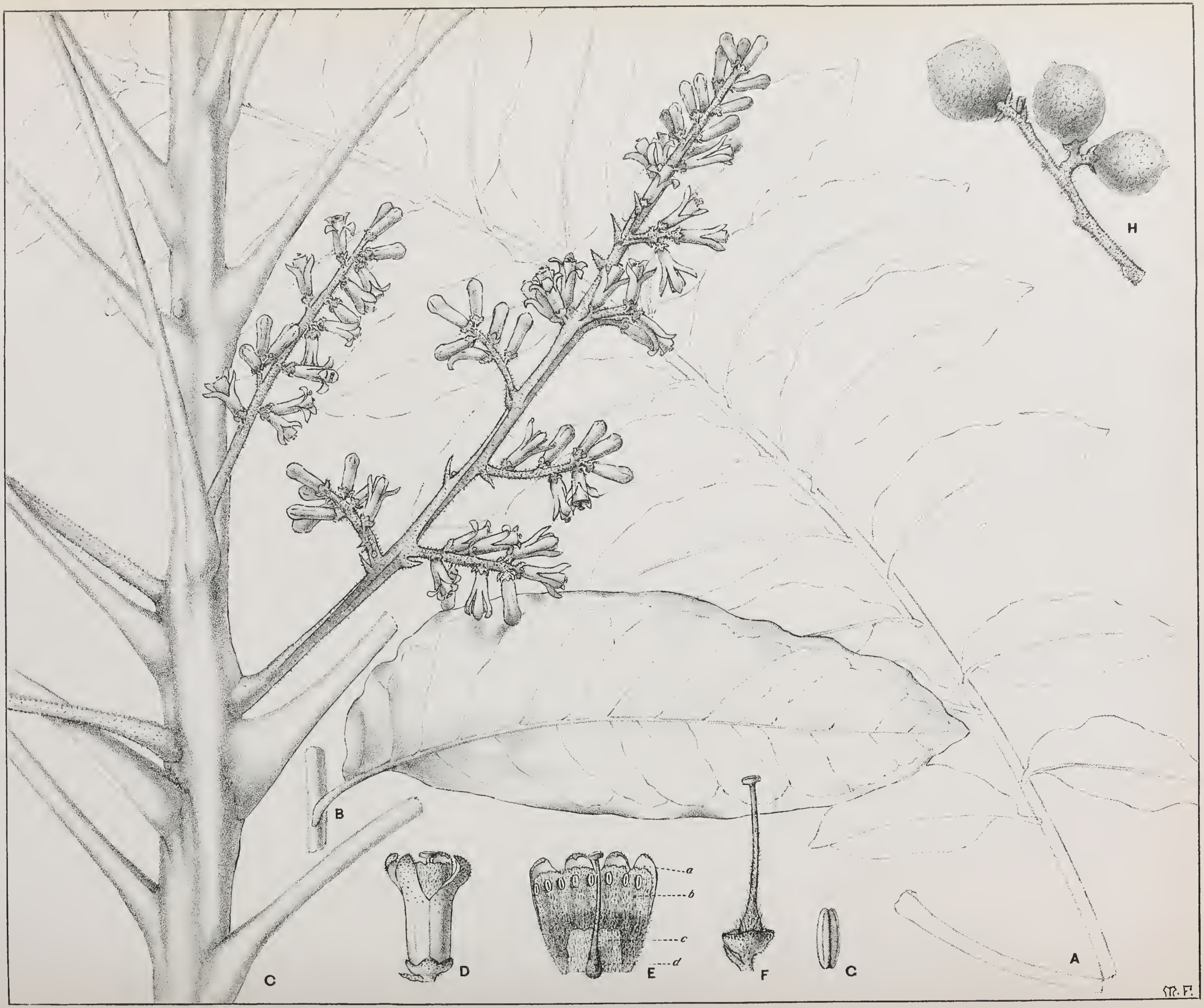
Following in an extract from a letter written by the late Mr. Thomas Bawden, of Grafton, to me in 1891. He sent me twigs of *D. Muelleri*:—

> "There are many other valuable timbers in the Dorrigo brushes, amongst others, the Pencil Cedar, a use for which I learnt, previously unknown to me; I was shown a pair of old dray wheel naves made of Pencil Cedar, some twenty-five years ago. Hitherto I have thought Apple-tree was the most suitable timber we had for that purpose, but this piece would serve to show that the Pencil Cedar is equally as good."

Locally it is used for cabinet-work, flooring, lining, and ceilings of houses.

Size.—A large tree.

Habitat.—It is a brush tree belonging to the coastal districts, and probably extending a good deal into the rich brush forests in the upper parts of the rivers. It is a native of our Northern Rivers, particularly the Clarence, Richmond, and Tweed. As regards Queensland, Mr. F. M. Bailey in his *Queensland Flora* gives "Brisbane River, Moreton Bay, and other southern parts." John Dallachy found it on the Herbert River, so that its range may be defined from the Clarence to Central Queensland. As regards New South Wales, it should be looked for on the Bellinger, Macleay, and Hastings Rivers.



RED BEAN.

(*Dysoxylon Muelleri*, Benth.)

EXPLANATION OF PLATE 101.

A. Leaf reduced in size one half.

B. Leaflet, natural size.

C. Part of flowering branch.

D. Flower. (N.B.—Staminal tube yellow outside in a fresh state.)

E. Flower, opened out, showing—
  (*a*) Corolla.
  (*b*) Staminal tube.
  (*c*) Tubular disc (orange-coloured in fresh state).
  (*d*) Pistil.

F. Calyx and pistil.

G. Anther.

H. Fruit.

Corduroy bridge through virgin forest, near Gosford, New South Wales. (See photograph.)

The saplings for the bridge are composed of Turpentine (*Syncarpia laurifolia*) and Tea-tree (*Melaleuca styphelioides*).

The palms are Bangalows (*Archontophœnix Cunninghamii*), while the slender, half-barked trees (black at the butt and white higher up) are young Blue Gums (*Eucalyptus saligna*, Sm.).

No. 98.

Eucalyptus macrorrhyncha, F.v.M.

Red Stringybark.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *macrorrhyncha,* F.v.M.

Mueller (*Census,* &c.) quotes "First General Report of the Government Botanist of Victoria, 1853," as the authority for this name. It is there spelt as I have given it. The species was not, however, described until Vol. III of the "Flora Australiensis" (1866). See B.Fl. iii, 207, and Mueller's "Eucalyptographia."

This, in its typical form, is a very easily recognised species. The buds are, when fully developed, large, rhomboidal in longitudinal section, with pointed operculum, and the pedicels are long, so that the flowers and fruits form loose heads.

It may be described as follows:—

Juvenile foliage (figured in the *Eucalyptographia*).—The leaves may be described as follows:—Elliptical, margins undulate and irregularly toothed. Small tufts of hairs along the margin. The twigs, midribs and veins, and even the soft tissue more or less besprinkled with stellate hairs, the twigs abundantly so.

Mature leaves.—Usually 4 to 6 inches long and 1 to 1¼ inches wide. Rather coriaceous, equally green on both sides. Venation spreading, prominent, particularly the midrib. Intramarginal vein at some distance from the edge. Twigs and leaf-stalks angular.

Buds.—These are strongly pedicellate, and the edge of the calyx-tube forms a prominent ring, while the operculum is often curved, acuminate and often lengthened out into a point. In the matter of shape one cannot help likening them to those of *E. rostrata,* which, however, are small in comparison.

The buds are usually more or less angular, and in the typical form are very angular. In extreme forms the angularity disappears.

Fruits.—These vary somewhat in shape and size, but, owing to the long pedicels, the prominent edge of the rim, and the domed top, they can usually be recognised.

They vary as to amount of doming, so that eventually, in some specimens, the rim is obliterated. Valves well exsert.

The diameter of typical fruits is not much more than ⅜ inch at its greatest (rim) width.

A particularly large-fruited form has been collected by Mr. R. T. Baker in the Rylstone district, where trees with fruits of ordinary size are also found. Large fruits (not so large as the Rylstone ones) are also found with the ordinary ones at Howell (J.H.M).

Timber.—This seems in every respect to resemble that of *E. capitellata.* It is the common Goldfields Stringybark, and its timber is brown.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *macrorrhyncha*, from two Greek words, *makros*, long, and *rhynchos*, a beak, in allusion to the long, beaked flower-bud.

Vernacular Names.—It is usually known as "Stringybark" merely, but by comparison with E. *eugenioides* as "Red Stringybark." According to Howitt, it is known as "Mountain Stringybark" in Gippsland, a name to which in this State the other Stringybarks have also some claim. It is the common Stringybark of the north-eastern districts of Victoria, and appears to be quite absent from the coast districts of New South Wales.

Leaves.—The oil of the leaves has been investigated by Baker and Smith.[*]

They obtained by distillation a yield of 0·28–0·31 per cent. of oil. The oil is reddish-brown, has the sp. gr. 0·921–0·927 at 22°, and begins to boil at 172°. It contains a trace of phellandrene, cineol, and crystallized eudesmol.[†]

I first drew attention[‡] to the presence of a yellow colouring matter in the leaves during progress of my research on the tannin content of various leaves, but it was reserved for Mr. H. G. Smith to make a full chemical investigation of this substance, which he called "Myrticolorin."[§]

During the last drought, Mr. F. B. Guthrie made an analysis of the leaves with respect to their fodder value, with the following result (*Agric. Gaz. N.S.W.*, Oct., 1899):—

Water.	Ash.	Fibre.	Ether extract (oil, &c.).	Albuminoids.	Carbo-hydrates.	Nutrient value.	Albuminoid ratio.	Tannin (oak bark).
39·45	2·59	6·38	5·05	5·56	40·97	57¾	1 : 9½	2·9

Fruits.—The fruit has usually a sharp rim, but in northern and western New South Wales specimens this is not always the case, the rim being often rounded and even domed.

Timber.—Hard, and mostly tinged with a deeper red-brownish coloration, but occurs also paler coloured; it is durable, and easily fissile into fence-rails, shingles, and palings, and is very useful for all purposes for which rough split timber is required above ground; it is also sawn into weatherboards and scantlings, and furnishes a fair fuel. The specific gravity of the seasoned wood is about 1·020 or 63½ lb. to the cubic foot (Mueller). A sample from the Monaro, New South Wales, is an excellent furniture wood, being light, strong, and close-grained, and capable of a good polish. It is, however, chiefly used for fencing and wheelwrights' work in southern New South Wales.

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[*] *Journ. Roy. Soc. N.S.W.*, xxxii, p. 104.

[†] *Op. cit.* xxxiii, p. 86; Bericht von Schimmel and Co., Apr. 1, 1900, p. 24.

[‡] *Proc. Roy. Soc. N.S.W.*, xxi, 252 (1887).

[§] "On Myrticolorin, the yellow dye material of Eucalyptus leaves." *Trans. Chem. Soc.*, 1898, 697.

Some specimens of this timber were tested by Mr. F. A. Campbell (*Proc. Roy. Soc. Vict.*, 1879) for tensile strength. His figures (pounds per square inch) are 23,000, 23,400, and 20,000. An inferior piece broke at 11,700. The specimens broke with a very long fracture.

Experiments on the transverse strength of the wood of *E. macrorrhyncha*, by Baron von Mueller and J. G. Luehmann.

The specimens were 2 feet long and 2 inches square.

Deflection.		Total weight required to break each piece.	Value of strength, $S=\frac{LW}{4BD^2}$	Specific Gravity.	
With the apparatus weighing 780 lb.	At the crisis of breaking.			Air-dried.	Absolutely dried.
Inches.	Inches.	Pounds.			
·17	·62	2,412	1809	·952	·809
·17	·60	2,384	1788	1·060	·901

Here are three reports by experts on timber of ascertained botanical origin.

"The common Stringybark of Central and North-eastern Victoria is of less value as a timber tree than other Stringybarks."—(A. W. Howitt.)

"Red Stringybark," "Forest Mahogany."—Wood red, a good lasting timber, stands well in the ground, but is too free for posts. Two or three years ago I found some timber I had once helped to split. It was from a tree of this species, was used for a sledge for drawing timber when the ground was boggy. The timber was prepared for putting together, but thinking it too free for the purpose we placed the side pieces one on the other, covering them with large pieces cut off the sides and then with bark. When found about twenty-five years after, the bark had, of course, disappeared; on removing the chips, which were fairly sound, the two side pieces were found to be almost the same as when split, fresh coloured with the marks of the adze as if they had been made only twelve months previously.

"This and *E. Sieberiana* both very lasting woods; best we have for posts except *E. corymbosa*."—(A. R. Crawford, Moona Plains, Walcha, in a letter to me, 1st February, 1896.)

"Red Stringybark. *E. macrorrhyncha*. A good and durable timber, as may be seen from the examination of the fences in the district, which are nearly all of this timber, and some of them very old."—(Henry Deane, reporting on the timbers of the Glen Innes to Tenterfield Railway Line, 1885).

Exudations.—It yields a ruby-coloured kino, soluble in water and spirit and an excellent astringent.

Size.—A large tree.

Habitat.—*E. macrorrhyncha* is found in Victoria (where the type came from), South Australia (?), New South Wales, and southern Queensland.

VICTORIA.

As regards its range in Gippsland, Mr. A. W. Howitt states:—

"It commences at Glen Maggie, on the dry Silurian ridges, extends all along the stony ranges flanking the valley, and reaches an altitude of about 3,000 feet on the track leading up from the Wellington to the Snowy Plains."

Mueller gives its range:—

> "On comparatively sterile ridges and ranges, chiefly of the Silurian formation, widely and often gregariously distributed through much of the wooded country of Victoria, for instance, towards the Upper Yarra and in the Dandenong Ranges; thence to the mountains of Gippsland easterly, to the Mitta Mitta and Hume River northerly, the Avoca and the Pyrenees westerly, and towards Cape Otway southerly in our Colony."—(*Eucalyptographia*, under *E. macrorrhyncha*).

SOUTH AUSTRALIA.

In South Australia *E. macrorrhyncha* is confined to the Adelaide district, according to the late Professor Tate; but the only specimen in his herbarium so labelled is *E. obliqua* (in bud only). I therefore recommend that the record be further inquired into.

NEW SOUTH WALES.

In this State it is found along the Dividing Range and Table-land from south to north. It goes down the western slopes, and on the spurs of the main range, and on the isolated ranges some distance into the interior. The most westerly localities actually recorded are the Harvey and Warrumbungle Ranges.

Southern Localities.—Quiedong, near Bombala (W. Baeuerlen); Bombala to Delegate (J.H.M.); Tantawanglo Mountain, Cathcart, Montgomery's Mill (H. Deane); Gungahleen (Goldsbrough, Mort, & Co.), with thick, short leaves and strongly marked venation; Tumut (W. W. Froggatt); Gundagai (H. Deane); Barber's Creek (H. J. Rumsey); Bowral to Wombeyan Caves, one mile east (J.H.M. and R. H. Cambage); Cootamundra to Grenfell (District Forester Arthur Osborne); Weddin, near Young (J.H.M.); Borenore, near Forbes (H. Deane), with fruits similar to those from Cootamundra, &c.

Western Localities.—Hassan's Walls, Bowenfels (J.H.M.); Capertee and Sunny Corner, with remarkably angular rim to fruits (J.H.M. and J. L. Boorman); Rylstone (R. T. Baker); Mudgee (W. Woolls). Fruits rather smaller than the type.

A coarse *grandiflora* form, with the fruits $\frac{5}{8}$-inch in diameter, the rim very prominent and urceolate in shape, was collected by R. T. Baker at Mount Vincent, also at Rylstone.

Perth, found only in the ranges around Apsley; small stunted trees used for props in the mines adjacent (J. L. Boorman).

"Red Stringybark," buds swollen like those of *E. stellulata*, Canoblas, Orange; ditto (A. W. Howitt); Ophir, Orange (R. H. Cambage); Wellington (A. Murphy).

Near top of Mount Bulaway, Warrumbungle Ranges, at 3,000 feet (W. Forsyth). The angularity of the rim in these fruits is nearly obliterated, and the pedicels are very short. The opercula are pointed, but far less sharp than those of normal *macrorrhyncha* usually are. That this tree is a strong connecting link between *E. capitellata* and *E. macrorrhyncha* is unquestionable. A form with normal fruits is also found in the Warrumbungle Ranges (W. Forsyth).

Minore, near Dubbo, perhaps the most westerly locality in this herbarium (J. L. Boorman). Buds less angular than the type.

The Meadows, Dubbo district; used for fencing-posts and charcoal (Assistant Forester A. R. Samuels). The buds remarkably like those of *E. rostrata*, so much so, that a word of caution is necessary. This is not an unusual thing in western forms, but the anthers and the venation of the leaves are very different.

Northern Localities.—But it is as we travel north, farthest away from the home of the type, that the aberrant forms become most plentiful. The doming of the rim is usually a very good guide in this species, but sometimes this character is not well defined, and the rim must then be interpreted with caution. *E. macrorrhyncha* runs into *E. Muelleriana*, the "Yellow Stringybark" or "Blackbutt," without any doubt.

In New England the tendency of the leaves is to become smaller and more coriaceous, and the buds to become less to more angular* than the type, the operculum shorter, and the fruit more pear-shaped. The rim is not sharp, and the domed portion is narrow. At the same time there are considerable differences in the shapes and sizes of the fruits in these northern forms. Following are some specimens in the National Herbarium :—

Tingha (R. H. Cambage) ; Howell, near Tingha (J.H.M. and J. L. Boorman) ; Mount Seaview (J.H.M.) ; Bluff River, near Tenterfield, also Glen Innes (H. Deane) ; Tent Hill, west of Deepwater (E. C. Andrews) ; Emmaville (J. L. Boorman, E. C. Andrews).

QUEENSLAND.

Stanthorpe (F. M. Bailey).

EXPLANATION OF PLATE 102.

A. Juvenile leaves (from Bombala, N.S.W.).

B. Flowering branch (from Weddin, N.S.W.).

C. Fruits (from Mount Esk, Bowan Park, near Cudal, N.S.W.).

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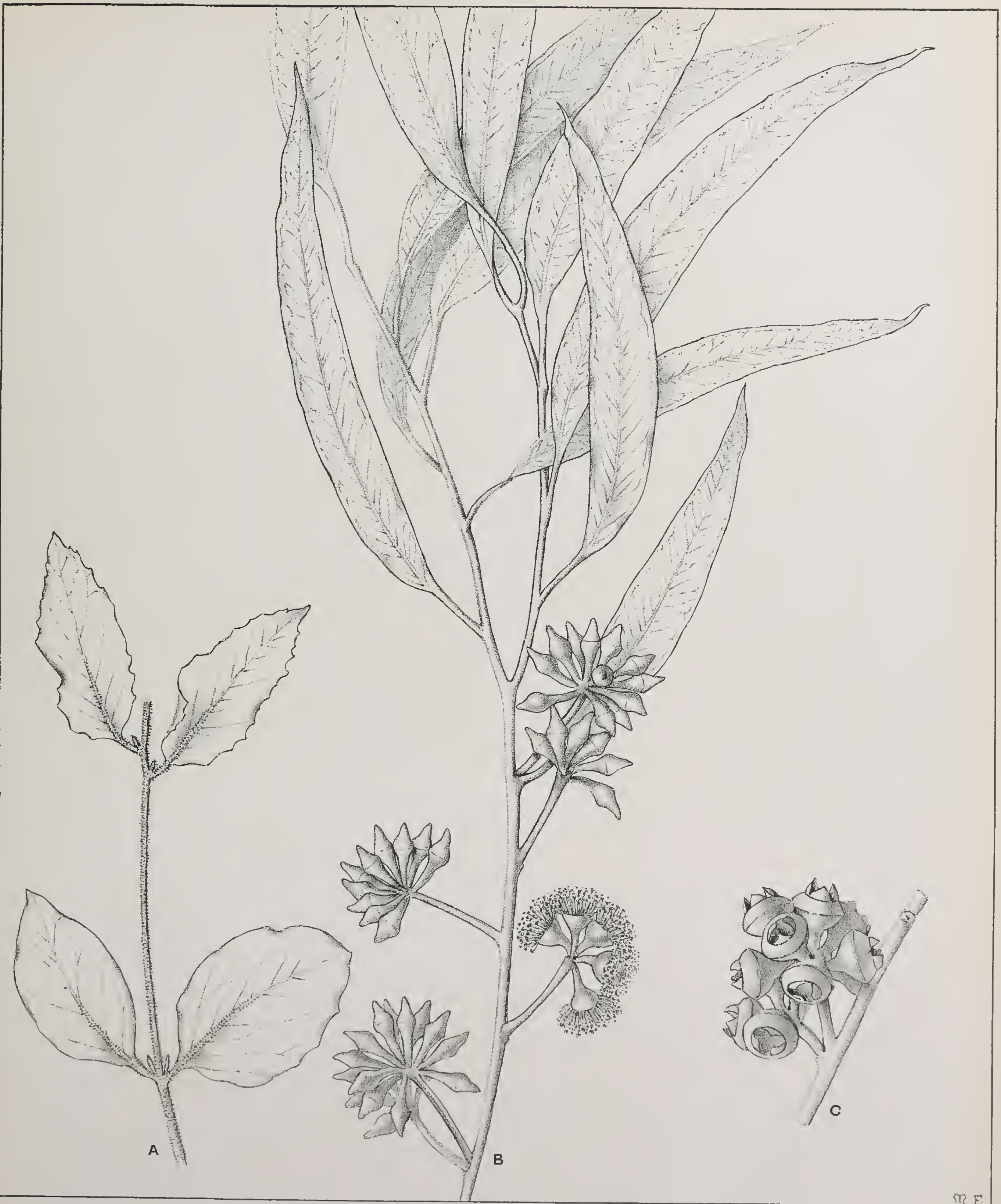
* In the more exposed situations the mutual compression causes the buds to be bluntly angular and compressed just like *E. capitellata* of the coast.



RED STRINGYBARK.
(*Eucalyptus macrorrhyncha*, F v.M)

No. 99.

Acacia aulacocarpa, A. Cunn.

A Brush Ironbark.

(Family LEGUMINOSÆ : MIMOSÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *aulacocarpa*, A. Cunn., in Hooker's *London Journal of Botany*, i, 378 (1842).

Slightly hoary or ashy-glaucous, with a minute almost powdery down, which at length disappears; branchlets angular.

Phyllodia falcate-lanceolate, narrowed at both ends, 3 to 4 inches long, about ½ inch broad, with a few slightly prominent nerves, the lower ones confluent with the lower margin at the base, and numerous smaller closely packed veins, rarely anastomosing.

Spikes slender, loose, 1 to 2 inches long, tomentose-pubescent or glabrous.

Flowers mostly 5-merous.

Calyx with short broad lobes.

Petals united below the middle.

Pod falcate-oblong, flat but thick, obtusely recurved at the end, 1 to 2 inches long, ½ to ¾ inch broad, much narrowed at the base, hard, obliquely veined.

Seeds obliquely transverse, not seen perfect. (B.Fl. ii, 410.)

Var. (?) *macrocarpa*, Benth.

Pods 3–5 inches long, ¾ to 1 inch broad, much undulate. Keppel Bay, Shoalwater Bay, and Broad Sound, *R. Brown* (B.Fl. ii, 410).

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *aulacocarpa*, from two Greek words, *aulax*, *aulakos*, a furrow, in allusion to the grooving of the sutures of the pods, and *carpos*, a fruit.

Vernacular Names.—"Brush Ironbark" is the principal name by which I know this tree. Only very few trees in Australia go under the name of Ironbark, that name being mainly reserved for certain Eucalypts. It has a very hard, durable timber which reminds some people of Ironbark. The tree usually grows in brushes or jungles.

I have also heard it named "Hickory," a common name for the taller Acacias with falcate leaves (phyllodia).

Aboriginal Name.—"Dilka" of the Port Curtis blacks (Hedley).

Fruits.—The pods are remarkable in appearance. Sometimes they are very wide. They are often twisted and veined.

Bark.—This tree yields a tan-bark, used in Queensland to some extent. A specimen received from Dr. T. L. Bancroft, who obtained it from Deception Bay, near Brisbane, gave 7·34 per cent. of tannic acid, and 13·9 per cent. of extract. Height of tree, 30 feet; diameter, 1 foot; stripped in May, analysed in July. Locally, it is a very common species.

The bark analysed had an average thickness of $\frac{3}{8}$ inch; the interior consists largely of yellowish fibre, while the exterior is greyish, deeply furrowed, and consists of large flakes, useless for tanning purposes. It, however, cuts solid, and its general appearance would lead one to suppose that it is richer than it is.

Timber.—Wood hard, heavy, tough, and dark-red. It is very durable. Some years ago Mr. W. Baeuerlen reported to me as follows:—

> "A Brunswick River farmer showed me two rails on the bank of a creek where they have often been subjected to floods. Those two rails he himself put in twenty-three years ago, and the tree which furnished the rails had then been lying on the ground either five or seven years, the farmer is not quite sure which. However, the other day we took a splinter off one of the rails and found it as sound as ever. Its ornamental appearance, the durability of its timber, and its occurrence in open and rather poor country, as well as in higher situations amongst rocks, should make this species especially adapted for cultivation."

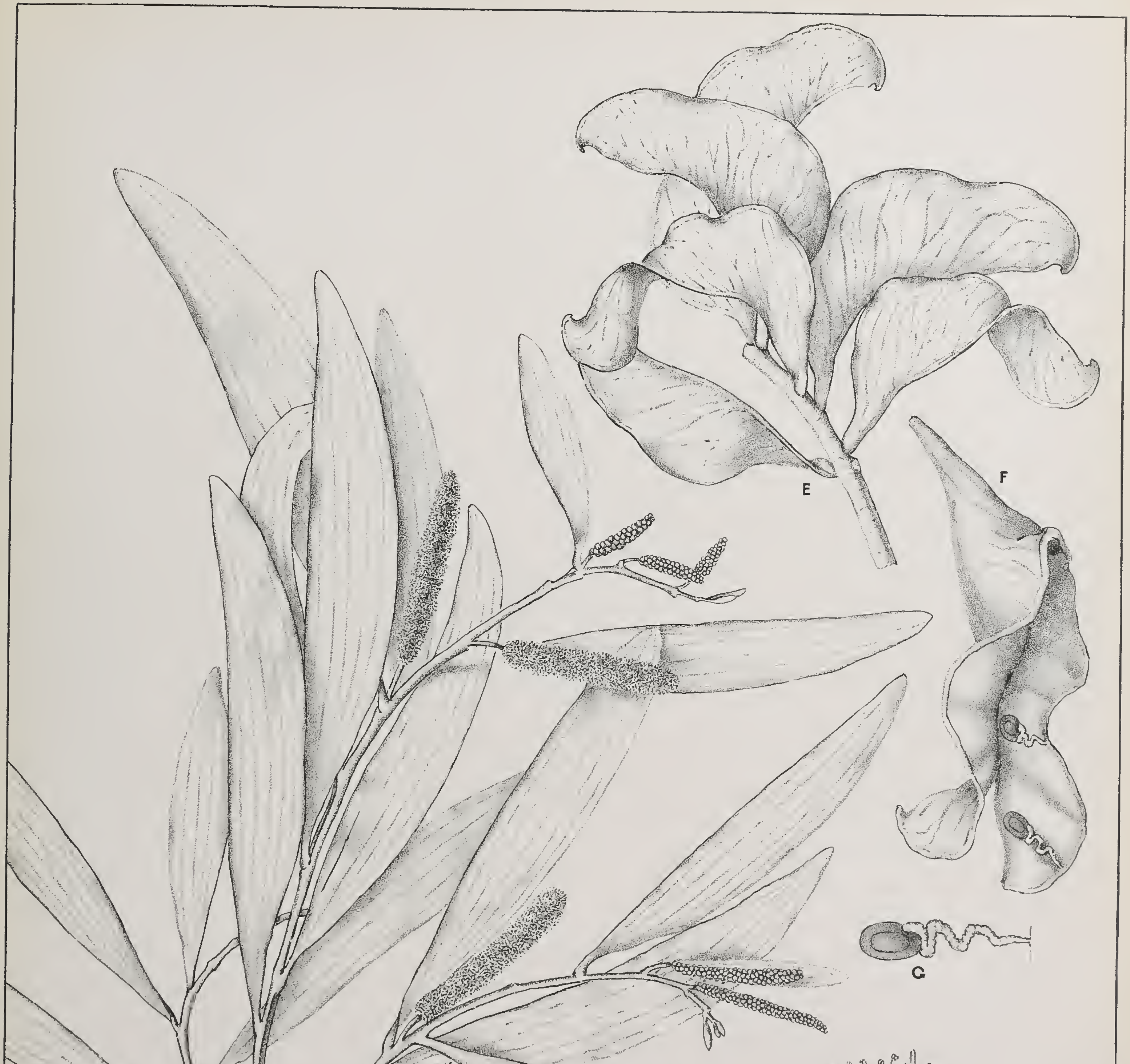
Size.—Usually a medium-sized tree, but it sometimes attains a large size. Mr. W. Baeuerlen reported to me that at Moonambah, Brunswick River, N.S.W., he had seen it attain a height of 60–80 feet, a diameter of 18 inches. An old farmer told him that the tree was formerly more plentiful, and that there used to be trees 2 feet in diameter!

Habitat.—The type came from Bowen, Queensland. It occurs in northern New South Wales and central and northern Queensland, and is also found in Kimberley, North-west Australia (W. V. Fitzgerald). Connecting localities should be looked for.

It is rather plentiful on the Richmond and Brunswick Rivers, New South Wales. The most southerly locality from which I have seen it is South Woodburn, Richmond River, and it should be further searched for.

EXPLANATION OF PLATE 103.

A. Flowering twig.
B. An individual flower bud.
C. A single flower.
D. Flower, opened out, showing—
  (*a*) Calyx.
  (*b*) Corolla.
  (*c*) Stamens.
  (*d*) Pistil.
E. Pods from Brunswick River, N.S.W.
F. Pods, showing seeds, from Brisbane, Queensland
G. Seed.



A BRUSH IRONBARK.
(*Acacia aulacocarpa*, A. Cunn.)

No. 100.

Cryptocarya glaucescens, R.Br.

A Brown Beech.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya.* (See Part III, p. 72.)

Botanical description.—Species, *glaucescens,* R.Br. Prod., 402.

A tree of 40 feet and upwards, the young branches and petioles minutely pubescent when young, but soon becoming glabrous, the inflorescence usually hoary-pubescent.

Leaves.—Ovate elliptical or oblong, obtuse or shortly acuminate, shortly contracted at the base, flat, not usually so rigid as in *C. obovata*, penniveined and reticulate but the veins rather fine and the reticulations little conspicuous or in some varieties conspicuous or even prominent on both sides, both surfaces green or somewhat glaucous, rarely above 4 inches long in flowering specimens, but larger on luxuriant shoots.

Flowers.—Numerous, shortly pedicellate, in thyrsoid panicles shorter or longer than the leaves, the upper ones often forming a large terminal panicle.

Perianth.—1 to 1¼ lines long, hoary-pubescent, the tube oblong when fully out, turbinate when young, the segments about as long as the tube or rather longer.

Glands.—Stipitate, appearing to belong as much to the outer as to the inner filaments.

Staminodia.—Acuminate.

Fruiting perianth depressed-globular, ½ to nearly ¾ inch diameter.—Meissn. in DC. Prod. xv, i, 72. (B.Fl. v, 297.)

Var. *Cunninghamii.* Scarcely distinguishable from the eastern form, except by rather larger flowers and the perianth-tube rather shorter.—*C. Cunninghamii,* Meissn. in DC. Prod. xv, i, 73. Hunter's River, Brunswick Bay, N.W. coast, *A. Cunningham.*

C. hypoglauca, Meissn. l.c. from N.W. Australia, which I have not seen, but is supposed to be from A. Cunningham's collection, is probably the same species.

Var. *coriacea.* Leaves thick, rigid, and more prominently reticulate, often very glaucous underneath.—Rockingham Bay, *Dallachy.*

Var. *nitida.* Leaves coriaceous and shining, with fine veins, green on both sides, or scarcely glaucous.—*C. Moretoniana,* Meissn. l.c. 74.—Moreton Bay, *A. Cunningham*; Archer's Creek, *Leichhardt.*

C. Bidwillii, Meissn. l.c. 74, of which the specimens from Wide Bay, *Bidwill,* are in young fruit only, and not satisfactory, may be the same variety.

All the above varieties run much one into the other, and in view of the large number of specimens I have had before me, it seems impossible to consider any of them as species permanently distinct. (B.Fl. v, 297.)

It would be desirable to submit these varieties to rigid re-examination.

Botanical Name.—*Cryptocarya*, already explained (see Part III, p. 73); *glaucescens*, Latin, *glaucus*, bluish-grey or sky-coloured, in botany glaucous or glaucescent (tending to be glaucous), referring to the pale underside of the leaves of this tree.

Vernacular Names.—The earliest names I can find applied to this timber are "Laurel" and "Black Pine." It is often called "She Beech" and "Brown Beech," but the name "She Beech" is applied to so many trees, I think it would be a convenience to adopt the latter name, although the name is not exclusively applied to this tree. Mr. Rudder, of Kempsey, sent it to me as "Scaly Beech."

I have known it to be called "Yellow Pine," at Wyong, and Mr. Andrew Murphy tells me that timber-getters in that district also know it by the names of "Native Laurel" and "Whitewood."

Aboriginal Names.—It would render an account of this tree clearer if I were to give some notes taken from the Catalogues of Northern and Southern Timbers, New South Wales, Paris, 1855; London, 1862, without separating them into the sub-headings: Vernacular names, Timbers, Size, and Habitat. The Southern timbers and those from Brisbane Water were collected by the late Sir William Macarthur, and the Northern timbers by the late Mr. Charles Moore.

(1) "Oorawang" of the Illawarra aborigines; "Baa nung" of the Brisbane Water aborigines. "Laurel." Diameter in inches, 24–28; height in feet, 70–120.

"A noble tree, with lofty bole and dense foliage. Wood soft, not durable, but useful; not without beauty."—(No. 6, Paris; No. 115, London.)

(2) "Oorawang" of the Illawarra aborigines. Called "Black Pine" at Brisbane Water. "Perishable when exposed to damp, and not esteemed."—(No. 30, Paris.)

(3) "Urri Burrigundie" of the Clarence and Richmond aborigines. Found in brushes on the coast of the Colony generally.

"A fine tree, attaining a height of 100 feet in good situations, and from 2 to 3 feet in diameter. Timber not used."—(No. xxv, Northern timbers, London.)

(4) "Gulgi" of the Richmond River aborigines.

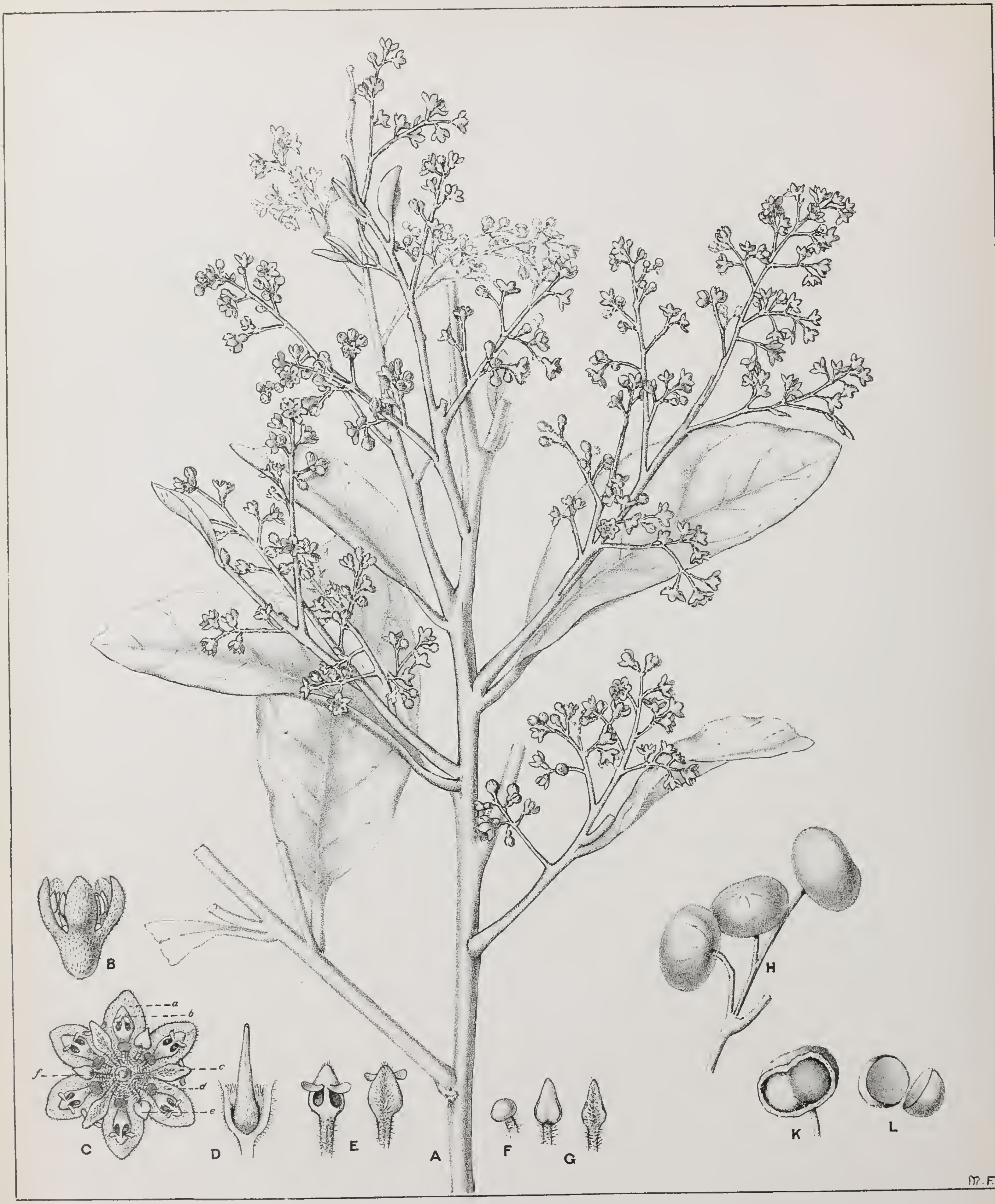
"A magnificent tree in size and appearance, attaining a height of 100 feet, and from 3 to 4 feet in diameter. Timber of great durability."—(No. iv, Northern timbers, London.)

Leaves.—The leaves of the Cryptocaryas and other Lauraceous trees will be tested some day for the Camphors and Essential Oils they contain. They are all more or less aromatic.

Fruit.—The fruits are aromatic and pungent, but certain birds are fond of them, according to Mr. Rudder, of Kempsey.

The depressed globular shape of the fruit is worthy of notice. At the same time it is not always so depressed as in the fruits figured.

Timber.—This is one of the brush timbers in regard to which we require far more accurate knowledge than we possess at present. Some early notes taken from the Catalogues of New South Wales, Northern and Southern woods, shown at the Paris Exhibition, 1855, and London, 1862, respectively, will be found under "Aboriginal Names." The botanical origin of the specimens referred to has been accurately ascertained.



A BROWN BEECH.

(*Cryptocarya glaucescens*, R.Br.)

The following particulars refer to trees accurately determined :—

"Known as 'Yellow Pine' at Wyong. Used for lining or flooring-boards and inside work generally, also for battens for fixing galvanized iron. Neither warps nor shrinks. This and Beech (*Gmelina Leichhardtii,* see Part IX) were down as flooring-boards for twenty years, were perfectly sound, and re-laid. Does not grow above 2 feet diameter. Has no sap."—(G. Goldsmith, Wyong.)

A specimen of Laurel or Beech from Cambewarra, N.S.W., is of a dirty white colour, and shows no figure. It is a fairly good working timber, and is used locally for staves and butter-kegs, and also for wheelwrights' work. Dresses up to a nice smooth surface. Its height is 70 feet, with a diameter of 3 feet.

Some "She Beech" from the Nambucca River, N.S.W., which I take to be of this species, is easy to work, of a light colour, and a silky nature; would be useful for flooring-boards and inside house-carpentry, and probably it is adapted for furniture framework.

Size.—Its size has been already referred to. It is a large brush tree.

Habitat.—Following are the localities given in the "Flora Australiensis":—

QUEENSLAND.—Rockingham Bay, *Dallachy;* Rockhampton, *Thozet, Dallachy;* Brisbane River, Moreton Bay, *A. Cunningham, F. Mueller,* and others.

N. S. WALES.—Hawkesbury, *R. Brown;* Hastings River, *Beckler;* New England, *C. Stuart;* Port Jackson, *Woolls;* Illawarra, *A. Cunningham,* and others. Sydney Woods, Paris Exhibition, 1855, *Macarthur,* n. 6 and 30; Northern woods, n. 4, and Southern woods, n. 115, London Exhibition, 1862, *C. Moore.*

The tree is confined to eastern New South Wales and Queensland. I have it from Conjola, near Milton, which brings the range as given in the "Flora Australiensis" a little further south. Mueller (*Census*) gives it Northern Australia, but perhaps he takes the species in the wide and provisional sense employed by Bentham.

EXPLANATION OF PLATE 104.

A. Flowering twig.
B. Young flower.
C. Flower opened out, showing—
  (*a*) Calyx.
  (*b*) Stamens, outer row.
  (*c*) ,, inner row.
  (*d*) Staminodia, outer row.
  (*e*) ,, inner row.
  (*f*) Stigma.
D. Pistil.
E. Anthers, back and front views.
F. Staminode, outer row.
G. ,, inner row.
H. Fruits (fruiting perianths) from Eastwood, near Sydney.
K. Fruiting perianth opened, showing seeds.
L. Seeds, 2 in each fruit.

A Critical Revision of the genus Eucalyptus.*

This work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets).

Eucalyptus amygdalina, Labillardière (vi).
,, *Andrewsi*, Maiden (vii).
,, *calycogona*, Turczaninow (iii).
,, *capitellata*, Smith (viii).
,, *coriacea*, A. Cunn. (v).
,, *dives*, Schauer (vii).
,, *eugenioides*, Sieber (viii).
,, *incrassata*, Labillardière (iv).
,, *macrorrhyncha*, F.v.M. (viii).
,, *Muelleriana*, Howitt (viii).
,, *obliqua*, L'Héritier (ii).
,, *pilularis*, Sm. (i).
,, *regnans*, F.v.M. (vii).
,, *stellulata*, Sieber (v).
,, *vitellina*, Naudin (vii).
,, *vitrea*, R. T. Baker (vii).

---

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1907.

Volume II (Parts XI–XX).

Part XI (Issued September, 1904).

No. 39.—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook. f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

Part XII (Issued November 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

Part XIII (Issued November, 1904).

No. 52.—The Mugga; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.)

Part XIV (Issued February, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

Part XV (Issued March, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

Part XVI (Issued June, 1905).

No. 64.—The Weeping Myall (*Acacia pendula*, A. Cunn.).
No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

Part XVII (Issued October, 1905).

No. 68.—The Drooping She-Oak (*Casuarina stricta*, Ait.).
No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
(*Two Plates.*)

Part XVIII (Issued November, 1905).

No. 71.—The Cudgerie (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—The Giant Gum Tree (*Eucalyptus regnans*, F.v.M.).
No. 73.—The Black She-Oak (*Casuarina suberosa*, Otto et Dietr.).

Part XIX (Issued January, 1906).

No. 74.—The Yellow-wood (*Flindersia Oxleyana*, F.v.M.).
No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
No. 76.—The Bull Oak (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

Part XX (Issued July, 1906).

Recapitulatory (*Sixteen Plates*).

Volume III.

Part XXI (ISSUED AUGUST, 1906).

No. 77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.).

(Two Plates.)

No. 78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).

No. 79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

Part XXII (ISSUED FEBRUARY, 1907).

No. 80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey).

(Two Plates.)

No. 81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).

No. 82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

Part XXIII (ISSUED MARCH, 1907).

No. 83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).

No. 84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).

No. 85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.).

(Two Plates.)

Part XXIV (ISSUED MAY, 1907).

No. 86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).

No. 87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).

No. 88.—The Mountain Hickory (*Acacia penninervis*, Sieb.).

(Two Plates.)

Part XXV (ISSUED JUNE, 1907).

No. 89.—The Rosewood (*Dysoxylon Fraseranum*, Benth.), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).

No. 90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).

No. 91.—The Two-veined Hickory (*Acacia binervata*, DC.).

No. 92.—The White Cedar (*Melia Azedarach*, L., var. australasica, C. DC.).

Part XXVI (ISSUED SEPTEMBER, 1907).

No. 93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).

No. 94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).

No. 95.—The Mulga (*Acacia aneura*, F.v.M.).

No. 96.—The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 8.

Published by Authority of the
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PART XXVIII OF THE COMPLETE WORK.

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXVIII.

Published by the Forest Department of New South Wales, under authority of
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* * *

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No. 101.

Amoora nitidula, Benth.

A Bog Onion.

(Family MELIACEÆ.)

Botanical description.—Genus, *Amoora*, Roxb., *Pl. Coromandel,* iii, 54, t. 258 (1819).

Flowers.—Polygamous.

Calyx.—3- to 5-toothed or lobed.

Petals.—3 to 5, imbricate in the bud, free from the staminal tube.

Staminal tube.—Urceolate or nearly globular, truncate or crenate; anthers within the tube, twice as many as petals.

Disc.—None, besides the thickened base of the ovary.

Ovary.—3- to 5-celled or rarely 2-celled, with 1 or 2 superposed ovules in each cell; style short or long, with a disc-like stigma.

Capsule.—Obovoid or globular, coriaceous or hard, opening loculicidally in 3 to 5 valves (or sometimes indehiscent ?).

Seeds.—Solitary in each cell, enclosed in a fleshy arillus (or sometimes without an arillus ?). Trees.

Leaves.—Pinnate, with entire leaflets.

Flowers.—Small, but usually larger than in *Aglaia*. (B.Fl. i, 383.)

Botanical description.—Species, *A. nitidula,* Benth., B.Fl. i, 383 (1863).

A tall tree, quite glabrous.

Leaflets.—2 or 4, opposite, without any terminal odd one, elliptical oblong, 3 to 4 inches long, or sometimes more, obtuse or shortly and obtusely acuminate, somewhat coriaceous and shining, narrowed at the base, the common petiole often slightly dilated towards the end.

Panicles.—Axillary, loose, but shorter than the leaves.

Calyx.—Very short, with 5 short teeth or lobes.

Petals.—5, about 2 lines long, glabrous or minutely ciliate.

Staminal tube.—Broadly urceolate; anthers 10; the tips slightly protruding.

Ovary.—2- or 3-celled, with 1 ovule in each cell.

Fruit.—Obovoid, hard, and almost woody; narrowed almost into a stipes at the base; 2-or 3-celled.

Seeds.—Nearly globular, laterally attached near the top, apparently without any arillus. (B.Fl. i, 383.)

There is only one species in Australia, but at least a dozen in India and Malaysia. Descriptions of the timbers of four of them will be found in Gamble's "Manual of Indian Timbers" (2nd Edition).

Botanical Name.—*Amoora,* from the Bengalee vernacular name (Amúr) of *A. cucullata,* Roxb.; *nitidula* (from *nitidus*) somewhat shining, in allusion to the lustre of the leaves.

Vernacular Name.—Its bark smells like onions; the wood is less strong, more like parsnips, and even like Rosewood.

Mr. Dunn writes: "It appears to me to be midway between Rosewood and Onion-wood. When you open the parcel you will, I think, find an odour of onion."

The tree generally has an odour of onions when kept, and hence the name of "Bog Onion," which it shares with a few other trees.

Aboriginal Name.—"Jimmie Jimmie" of those of the aborigines of Herberton, Queensland. I have not, however, seen specimens from further north than southern Queensland.

Leaves.—They are smooth and shining on both sides, darker on the upper side. Almost fleshy when fresh.

Fruit.—The capsule has a coarse, short stalk. When ripe it is externally of a warm brown, through which the very ornamental bright scarlet seeds appear. The seed is of a bright scarlet colour.

In Bengal, an oil is expressed from the seeds of *A. Rohituka,* W. and A.

Bark.—Rough and scaly.

Timber.—Yellowish when quite fresh, drying pale-coloured; fairly hard and tough. Paler than Rosewood; its perfume of that class. It is undoubtedly a valuable timber.

Mr. Dunn writes: "At first sight the bark and wood much resemble Rosewood, but the wood is not so red, and it is rather harder."

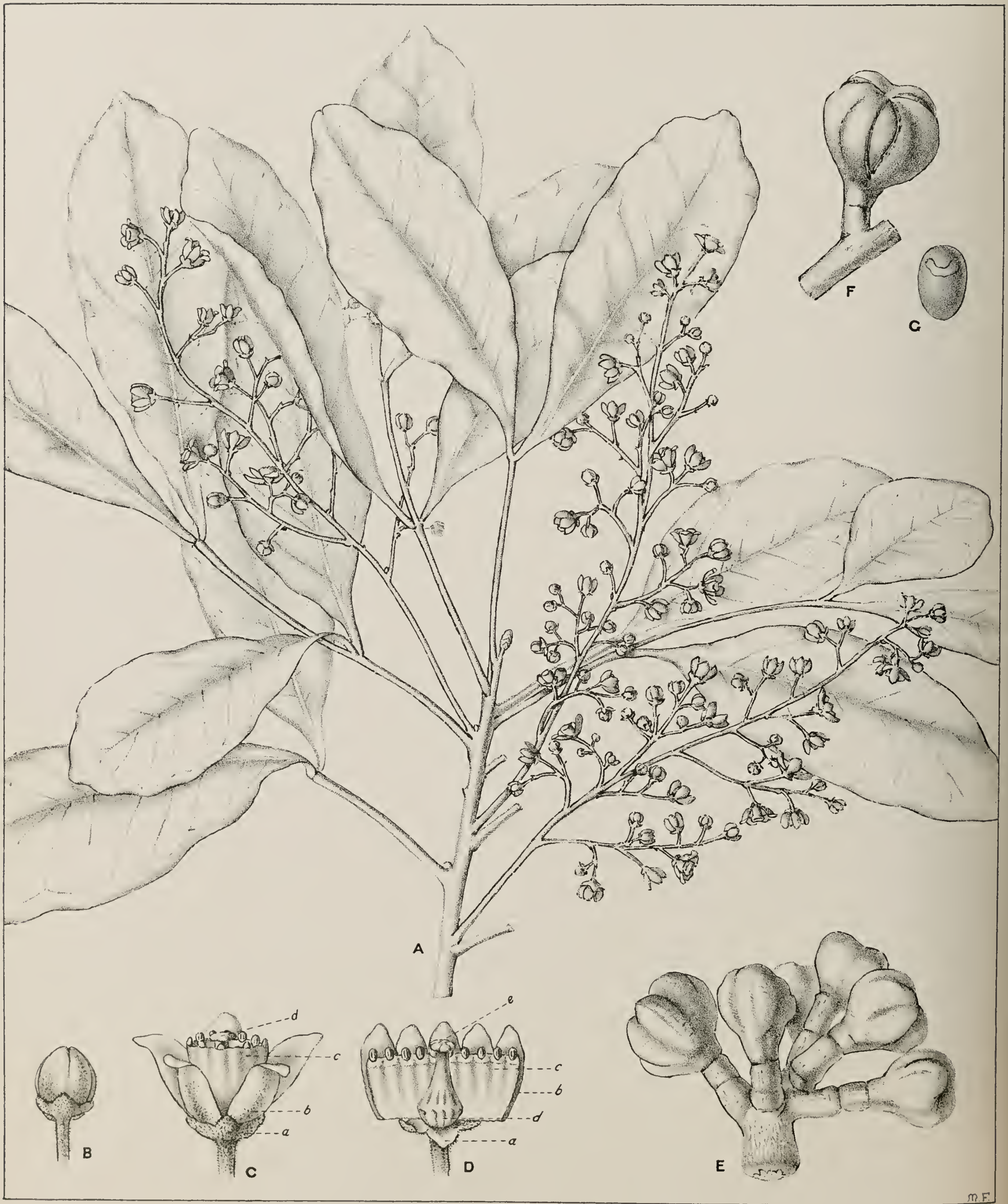
The timber of some Indian species is put to various useful purposes.

This is another of our useful timber-trees which is very imperfectly known. I therefore invite correspondence in regard to its range, and the quality of its timber. It is usually confused with other Bog-Onion trees.

Size.—A very tall tree; 80–120 feet high. Straight stems, unbranched up to 60 feet, and with a girth of 6–8 feet (J. L. Boorman).

Habitat.—*Queensland,* Moreton Bay (W. Hill). *New South Wales,* Richmond and Clarence Rivers (Beckler). (Flora Australiensis).

A native of rich, moist brushes in northern New South Wales and Queensland. In the Sydney Herbarium we have it from Acacia Creek, Macpherson Range (W. Dunn), and from Woodburn, Richmond River (W. Baeuerlen).



A BOG-ONION.

(*Amoora nitidula*, BENTH.)

EXPLANATION OF PLATE 105.

- A. Flowering branch.
- B. Bud.
- C. Flower showing—
  - (*a*) Calyx.
  - (*b*) Petals.
  - (*c*) Staminal tube.
  - (*d*) Stigma.
- D. Flower, opened out, showing—
  - (*a*) Calyx.
  - (*b*) Petals.
  - (*c*) Staminal tube with 10 anthers.
  - (*d*) Ovary.
  - (*e*) Stigma.
- E. Fruit.
- F. Ripe fruit opening loculicidally.
- G. Seed showing scar or tearing away of the testa where it is pendulously attached to the placenta.

No. 102.

Eucalyptus capitellata, Sm.

The Brown Stringybark.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. capitellata*, Sm.

A tree of medium size, often, in exposed situations, *e.g.*, near the coast, dwarfed and gnarled.

Juvenile foliage.—The margins undulate, and with a reddish rim when fresh. The leaves roughish, particularly on the lower side, owing to the presence of stellate hairs, which are also on the edges of the leaves and on the twigs.

In the intermediate stage they are *Eugenia*-like and shining on both sides, only very slightly darker on the upper side.

In this stage I am unable to separate the leaves from those of undoubted *E. macrorrhyncha*; but when growing in exposed marine situations they take on a form which I now proceed to describe, and which I believe to be quite characteristic of the species.

Thick in texture, nearly orbicular, almost sessile, with a cordate base. Emarginate, or with a slight apex or none; margin sinuate or slightly crenate, besprinkled copiously with stellate hairs on the under side, the twig abundantly so; shining on the upper side.

The intermediate leaves scarcely change in shape, but are very coriaceous and shining on both sides.

Mature leaves.—They are very coriaceous, even when grown at a considerable distance from the sea. The leaves usually larger and coarser than those of two other Stringybarks (*E. macrorrhyncha* and *E. eugenioides*) ever are, and often very oblique, but not always so. The foliage may be described as "coarse" in its typical form.

Shining; equally green on both sides; venation spreading.

Buds.—The buds and peduncles are generally somewhat thick and angular or flattened, and contrast with the neatness of shape of those of *E. eugenioides* and *E. macrorrhyncha.* Commonly found with a double operculum.

Flowers.—The filaments of the anthers sometimes dry dark.

Fruits.—In consequence of the fruits being sessile, or nearly so, and crowded into heads, these assume a polygonal shape at the base, as if they had been pressed together when in a plastic condition. With this exception, the fruits have the form of a very much compressed spheroid, the horizontal diameter of which is from one-and-a-half times to twice the depth The fruit is swollen out below the rim, which is sometimes very well defined, and of a red or brown colour. The fruit is sometimes truncate, but more frequently the rim is dome-shaped. There is great variability in the amount of exsertion of the valves. The fruit may be perfectly ripe without exserted valves, but a twig from the same tree may have them exserted.

Botanical Name.—*Eucalyptus,* already explained (see Part II, p. 31); *capitellata,* Latin, "a little head" or the "top of plants." In botany, capitellate, signifying that the flowers are without individual stalklets, and so form themselves into a head. This will be seen from the drawing.

Vernacular Names.—As a very general rule, this tree is known merely as Stringybark. "Red Stringybark" is a name sometimes applied to this species in this State, in allusion to the darker colour of the wood as compared with that of *E. eugenioides.* It also goes under the name of "Broad-leaved Stringybark." It is the "Mountain Stringybark" of Victoria (A. W. Howitt). J. E. Smith (following White) called it "Brown Gum-tree." Messrs. Baker and Smith have suggested the name "Brown Stringybark" for this species, and the name is as good as any.

Aboriginal Names.—"Yangoora" is a name given to *E. capitellata* and *E. macrorrhyncha* indiscriminately by the Gippsland aborigines, according to Howitt. The late Sir William Macarthur informed us that "Dthah-Dthaang" was the name given to *E. capitellata* by the blacks of the Illawarra district, and "Ngneurcung" by those of the Brisbane Water district, while "Bour-rougne" was the name given by those of the Camden district (perhaps, however, to one of the forms intermediate between *E. eugenioides* and *capitellata*).

Leaves.—Messrs. Baker and Smith (*Research on the Eucalypts*) report:—

Species.	Whence Collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[\alpha]_D$.	Saponification Number.	Solubility in Alcohol.	Constituents found.
capitellata	Canterbury, N.S.W.	0·9175	+ 4·8°	4·27	1 vol. 80%	Eucalyptol, pinene, phellandrene, sesquiterpene.

Bark.—Often very thick and fibrous, a typical Stringybark, the rough bark sometimes extending to all but the smallest branches. Sometimes the trees have a thinner, more sub-fibrous bark, with the upper portion of the trunk and limbs smooth.

Timber.—Brown or reddish-brown when fresh, drying to a paler colour. A good timber for splitting, and hence much used for posts, rails, buildings (formerly for shingles), and fuel. It is tough, strong, and durable.

Exudation.—It yields a kino belonging to my Ruby group, and alike soluble in water and in alcohol.

Size.—A medium-sized tree as a rule, say 50 feet high, with a diameter of of 2 feet to 2 feet 6 inches.

Range.—This species is confined to New South Wales, Victoria, and South Australia.

New South Wales.

The type came from Port Jackson. Around Sydney it appears to be almost (perhaps entirely) confined to the sandstone.

It occurs south, west, and north of Sydney, usually on poor rocky country.

Northern Localities.—The most northerly locality from which we have it is the Round Mountain, Guy Fawkes Range, 4,250 feet above the sea, and about 50 miles east of Armidale, on the Grafton Road. Buds as compressed as it is possible for them to be. Fruits large and hemispherical. It also occurs at New Apsley Falls, Walcha, near Swamp Oak, Walcha, and 14 miles east of Deepwater, at 4,000 feet.

Southern Localities.—*E. capitellata*, in its strictly typical form, is found for a considerable distance along the coast. Following are some definite localities:—

Bowral to Wombeyan. At Hilltop, near Mittagong, there is a variety locally known as "Blue-leaf Stringybark." It is so called because the leaves, especially in the sunlight, are observed to have a bluish cast, and this bluish appearance (especially noticeable in the young leaves), is largely retained on drying for the herbarium. The tops of the trees can be readily noticed amongst the other foliage from a neighbouring eminence.

I look upon this as one of the forms intermediate between *E. eugenioides* and *E. capitellata.* On account of the juvenile leaves, and of the fruits, I believe it to be nearer the latter than the former. The silvery or bluish cast of some Eucalyptus trees as they grow in the forest merits further inquiry. It is probable that several species present this appearance, perhaps at some seasons, and in some localities, more than others. I have noticed typical *E. eugenioides* in the Blue Mountains, with a "silver top."

"White Stringybark."—Tall trees, white bark, good timber, leaves bluish tint, easily distinguished from "red" in the bush by the more robust growth. Nye's Hill, Wingello, 8/99 (J. L. Boorman). The fruits are as small as those of *E. eugenioides,* but compressed like those of *E. capitellata.* They precisely resemble those of the Hilltop Blue-leaf Stringybark just referred to. The "bluish tint" of the leaves is also similar. Buds stellate, and strongly resembling those of *E. eugenioides* when young; coarse and angular, like those of *E. capitellata,* when more mature.

Clyde Mountain specimens precisely resemble those from the Blue Mountains, to be referred to presently.

Western Localities.—Then we turn to a form which may provisionally be referred to as the Blue Mountains form of the species, because it is so readily studied there, but it also occurs coastwards and southwards.

It is not a perfect Stringybark, as compared, *e.g.*, with *macrorrhyncha*, which is more fibrous. The more fibrous bark is yellowish; close to the wood it is white. Has clean limbs, at times slightly ribbony.

We have collected this form from Woodford to Cox's River (Bowenfels) and the Jenolan Caves, and also at Mount Wilson. Further localities to connect with the coast will be looked for. The most westerly locality from which it has been obtained is Mudgee, where it is called "Silvertop" (which points to a bluish cast), according to Mr. R. T. Baker, who collected it; also Coricudgy Mount (R. T. Baker, October, 1897).

VICTORIA.

There are two coastal forms of *E. capitellata*, as might be expected from the extensive geographical range of the species—the New South Wales and the Victorian–South Australian.

Howitt states in his "Eucalypts of Gippsland" that he has not seen it growing there at a less elevation than 500 feet, and that it cannot, therefore, strictly speaking, be called one of the littoral species. In New South Wales, and also near the Victorian–South Australian border, it, however, often grows quite close to the sea.

Dr. Howitt writes privately—"*E. capitellata* grows to a large size in the mountain districts, for instance, Moondarra, Wandin Yallock, and elsewhere in the Yarra watershed. In the western district the tree has usually a dwarfed habit."

Form with rugose buds.—I now place together some further plants of this species with more or less rugose buds. I think that this tuberculate appearance will be found to be somewhat common now that attention has been invited to it. Certain specimens from Mount Lofty, South Australia (M. Koch) may be compared.

I do not name this rugose-budded form as a variety, but, in view of the difficulty of "breaking down" such a widely-diffused and variable species as *E. capitellata*, it seems well to point out any prominent characters, to aid in classification.

Grampians, 2,000 feet (H. B. Williamson). These specimens, as regards the broad leaves and fruits, are very similar to the coastal Victorian form, but the buds (both calyx and operculum) are markedly rugose. Specimens also from the Grampians (C. Walter) have narrower leaves (nearer the type). The fruits are more pear-shaped, but there were only three in the umbel, and they are not much compressed. The specimens do not really differ from the preceding.

Darlimurla, S. Gippsland (H. Deane). The leaves and fruits typical (fruits slightly pedicellate), but the buds rugose. Fruits a little small.

South Australia.

Sandy rises covered with fern undergrowth, Narracoorte (W. Gill). Clavate, scarcely angular buds, with domed fruits, valves well exsert.

Mount Lofty, with short, broadish leaves, ovoid, shiny, slightly tuberculate buds, almost sessile, squat, conoid to hemispherical domed fruits. There is remarkable variation in the shape of the fruits in this tree. Buds sometimes rather small, some with conical operculum, and some with clavate shape of buds; many of them slightly rugose.

EXPLANATION OF PLATE 106.

A. Seedling. Notice the rather narrow leaves.

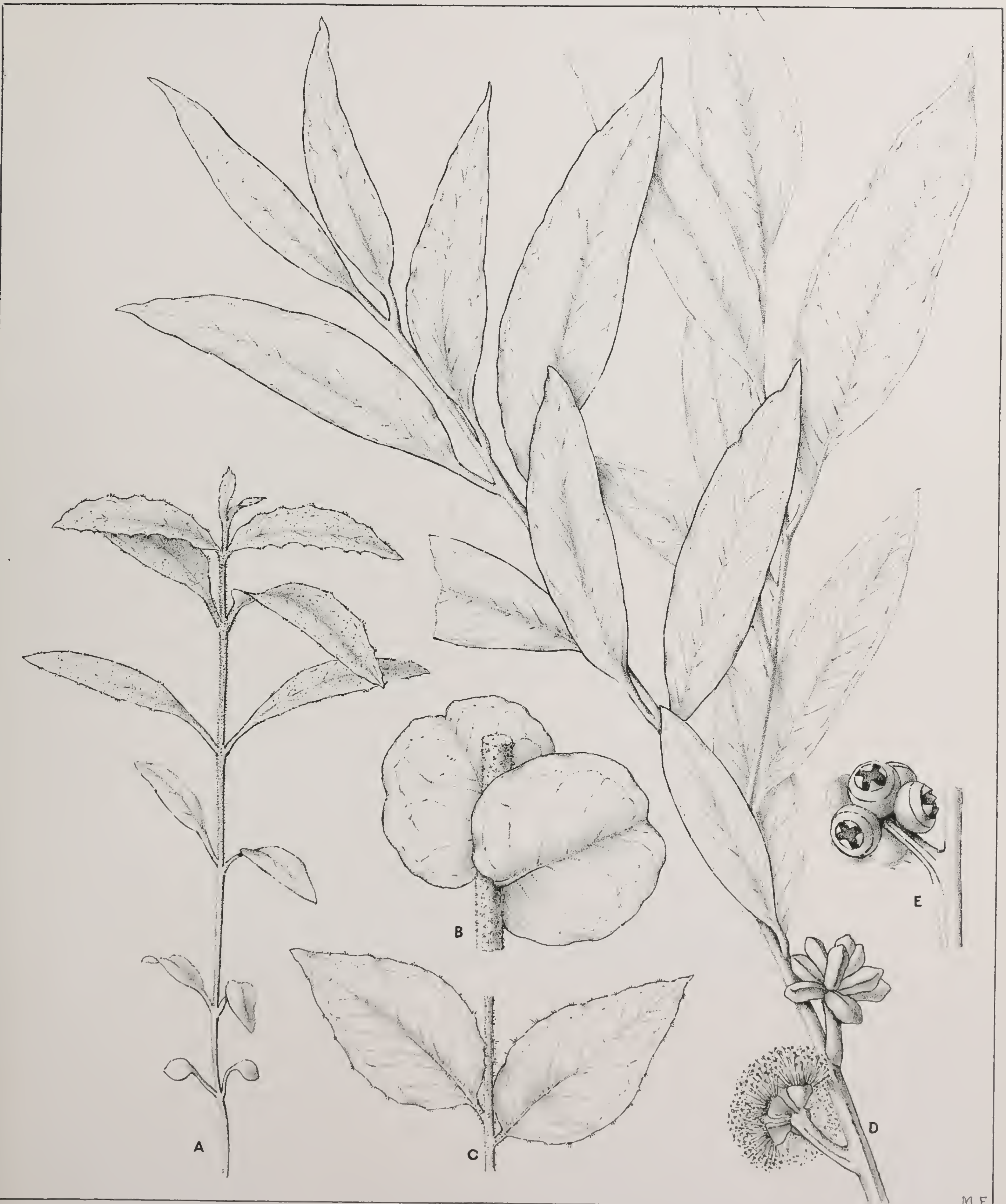
B. Sucker leaves from Middle Harbour, Port Jackson. Notice their almost orbicular shape and stellate (star-shaped) hairs.

C. Sucker leaves from Blackheath, Blue Mountains. Notice their comparatively great width and stellate hairs.

D. Flowering branch. Note the angular or compressed buds.

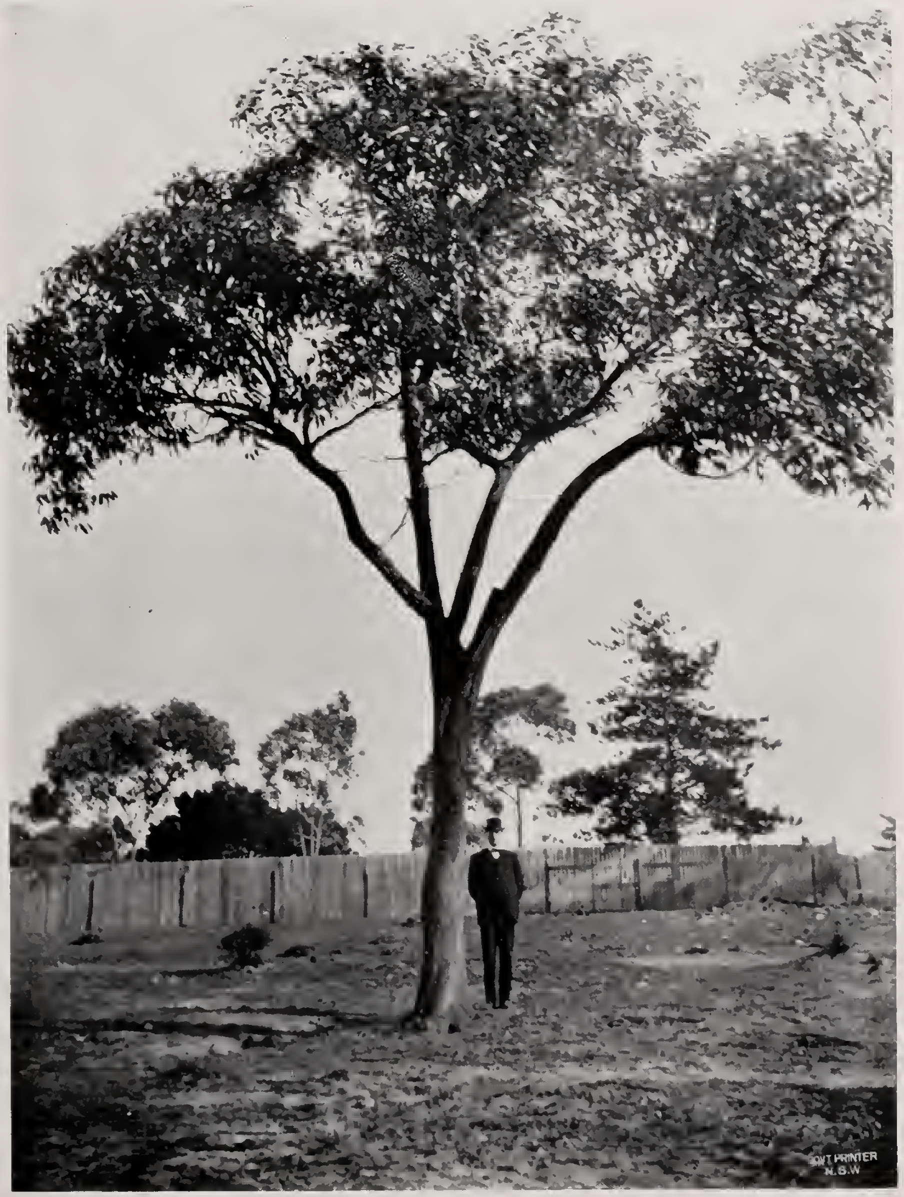
E. Fruits from Port Jackson, where the type came from.

Two photographs of trees from Mosman, Port Jackson (R. H. Cambage, photo.).



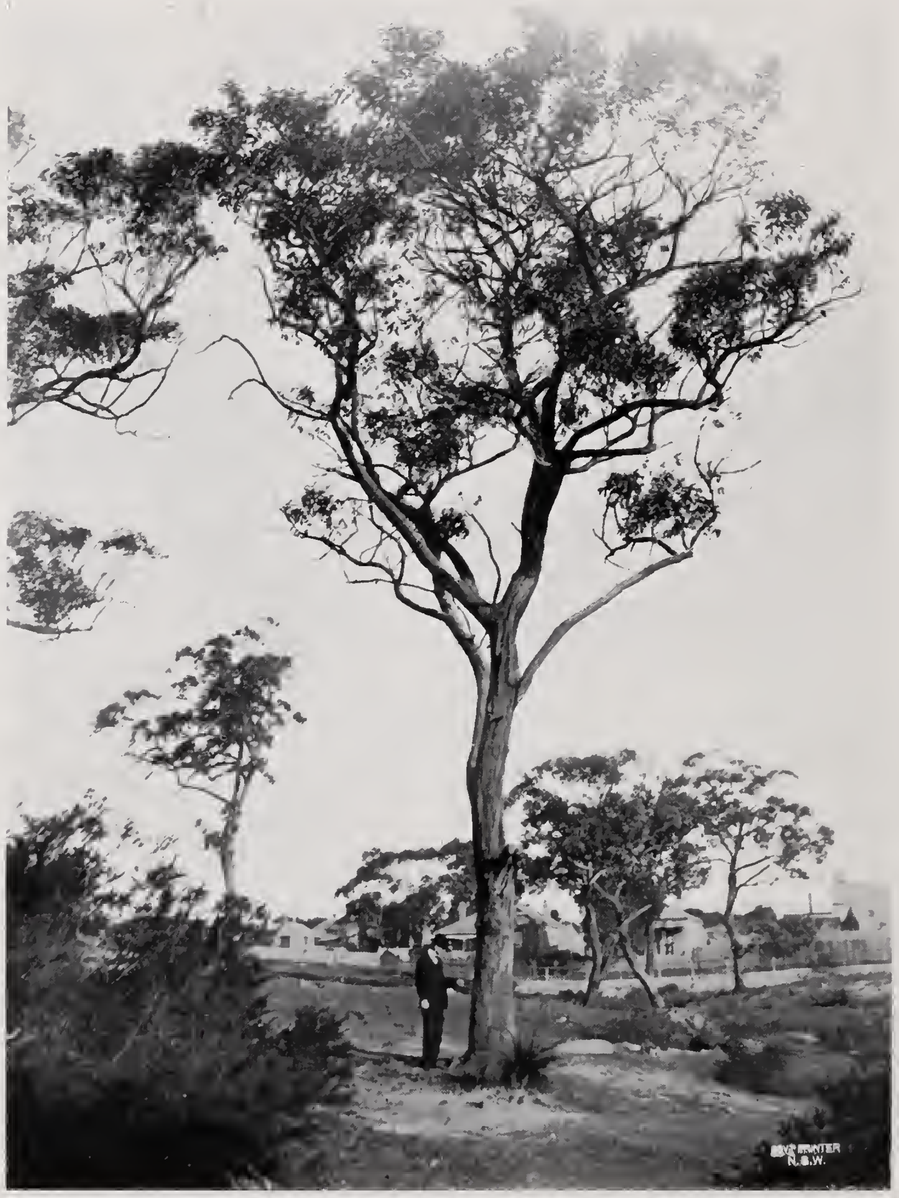
THE BROWN STRINGYBARK.

(*Eucalyptus capitellata*, SM.)



R. H. Cambage, photo.

Eucalyptus capitellata, SM. PORT JACKSON.



R. H. Cambage, photo.

Eucalyptus capitellata, Sm. MOSMAN, PORT JACKSON.

No. 103.

Acacia pycnantha, Benth.

The Broad-leaved Wattle.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See part XV, p. 103.)

Botanical description.—Species, *A. pycnantha,* Benth., in Hooker's *London Journal of Botany,* i, 351 (1842).

A small or middle-sized tree, quite glabrous; branches terete, or nearly so.

Phyllodia lanceolate-falcate, obtuse or rather acute, much narrowed towards the base, 3 to 6 inches long, the larger ones often 1 inch broad in the middle. Coriaceous, 1-nerved, penniveined with nerve-like margins, the marginal gland rather large near the base.

Racemes short, with a few dense globular heads of 50 to 100 flowers, mostly 5-merous, the rhachis and peduncles rather stout.

Calyx shortly lobed, ciliate, usually about ⅔ as long as the corolla.

Petals smooth, glabrous, distinct, or readily separating.

Pod straight or slightly curved, several inches long, about 3 lines broad, flat and rather thin.

Seeds oval-oblong, longitudinal; funicle not so long as the seed, thickened upwards, either not folded, or with one or two very short folds at the base. (B.Fl. ii, 365.)

Botanical Name.—*Acacia,* already explained (see Part XV, p. 104); *pycnantha,* from two Greek words, *pyknos,* dense, and *anthos,* a flower; hence dense-flowered.

Vernacular Names.—The "Broad-leaved Wattle" of South Australia; called also "Golden, Black, or Green Wattle." The term "Broad-leaved" is as good as any, the names "Golden," "Black," and "Green" being applied to quite a number of other Wattles.

I have heard it called "Plum-Coloured Wattle," owing to the dark cast of the foliage at certain seasons.

Aboriginal Name.—It was known under the name "Witch" by the aborigines of Lake Hindmarsh Station, Victoria.

Synonyms.—*A. petiolaris,* Lehm.; *A. falcinella,* Meissn.

Flowers.—It is a very handsome species, with its large deep-yellow flowers, abundantly produced, and full of perfume. The stout pedicels and petioles appear to be characteristic of the species.

An extract of the flowers of this Wattle was shown as a perfume at the Colonial and Indian Exhibition of 1886.

A score of other species of *Acacia*, *e.g.*, *A. suaveolens*, might be selected as worthy of experiment as perfume plants. "Mutton fat being cheap, and the Wattle plentiful, a profitable trade may be anticipated in curing the flowers, &c." (Piesse, *Art of Perfumery.*)

On the other hand we have :—

> All my experiments have proved that the perfume of Wattle-blossoms is very evanescent, and is stronger about mid-day than at any other time.

(Evidence of Mr. Bosisto before Victorian Royal Commission on Vegetable Products.)

Bark.—One of the richest tanning barks in the world; a richer may exist, but I do not know of it. A sample of this bark was received by me in 1883 from Messrs. F. Pflaum & Co., of Blumberg, South Australia, with the note, "contains 33·5 per cent. of tannin, according to Mr. Thomas, of Adelaide." I analysed the sample in April, 1890, and obtained the following extraordinary result by Löwenthal's improved process—the process I always adopted, viz. :—

Tannic acid	46·47 per cent.*
Extract	74·7 ,,

This had been stored seven years in the Museum, and had doubtless increased in percentage of tannic acid during that period. Nevertheless it was the grandest specimen of wattle-bark I ever examined. It was smooth, a model of compactness, contained a minimum of fibre, and therefore powdered splendidly, was of good colour, and an excellent bark in every way. South Australia had practically the monopoly of this bark, and it is a grand heritage,—the envy of the Eastern States.

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* The record of the highest percentage of tannic acid found in any Australian bark seems to me to be of very considerable interest. It is to be regretted that analyses of tanning materials are not always strictly comparable unless conducted under precisely similar conditions.

"Mr. J. M. Reid, President of the South Australian Chamber of Manufactures, while in Sydney a few days ago, submitted samples of wattle-bark from that State to Mr. Helms, of the New South Wales Department of Agriculture, for analysis.

"The first result worked out as follows :—Moisture, 11·20 per cent. ; tannin, 49·76 per cent., expressed in terms of crystallised oxalic acid by Procter's method, 56·03 per cent. in the dry bark.

"This being an exceptionally high result, he took further and different methods of testing the sample, but on each occasion similar figures were obtained. Mr. Helms expressed his great surprise at the standard attained, and spoke most highly of the South Australian product. Those interested in the wattle industry in that State have heard many disquieting reports about the West Australian mallet bark, and of its high tanning properties. An analysis of such bark made at the South Australian School of Mines, on a sample submitted, gave the following result :—Tannin, 25·7 per cent., expressed in terms of crystallised oxalic acid, so that there is very little to fear in competition with this article. Above all things (says the *Adelaide Advertiser*) local growers must carefully harvest their bark, and see that the trees which are being stripped are properly matured. The test of Mr. Helms beats the one made some years ago by Mr. J. H. Maiden (then Curator of the Technological Museum, Sydney), who has made Australian wattle a particular study, and who got as a result 46·47 per cent. of tannic acid from a sample submitted from South Australia."—(*Daily Telegraph*, Sydney, 22nd August, 1905.)

A second sample forwarded to me April, 1890, and analysed the same month, was from the vicinity of Mount Torrens, 20 miles east of Adelaide, and was obtained from Mr. J. E. Brown, then Conservator of South Australian Forests, through the courtesy of Mr. Albert Molineux, Secretary of the Agricultural Bureau of that State. It yielded 39·1 per cent. of tannic acid, with 73·5 per cent. of extract. It was, of course, an admirable bark, but it was thinner than the preceding sample, and would at once strike an expert as second to it. But even this contained nearly 3 per cent. of tannic acid more than any other sample of wattle-bark of other species I have examined. It is, however, only fair to say that I was unable at the moment to procure samples of the best brands of Tasmanian *decurrens* bark.

In forwarding the sample, Mr. Molineux says: "The bark was taken from a height of about 2 feet above ground. It was from a large tree, of which there have been, and still are, great numbers in the locality. Mount Torrens district is the best in the State for rich, good bark."

The following are results of analyses of thirteen samples of *A. pycnantha* bark received from Mr. J. E. Brown. They were stripped 29th April, 1890, analysed a month later, and were grown on the Government Farm, Belair, South Australia. Height of trees, from 8 to 14 feet.

No.	Age, Diameter, and part of tree from which taken.	Percentage of Tannic Acid.	Percentage of Extract.	Geological Formation, Soil, &c.
1	From butt of tree; diameter, 3½ in. (Age, about 5 years.)	37·5	63·9	Nos. 1 to 7 are taken from trees growing in an uneven basin, between the lower and upper ranges; soil, light sandy loam over gravel wash and yellow clay.
2	From limb of No. 1	33·75	63·25	
3	From butt of tree; diameter, 2 in. (Age, 4 years.)	28·5	57·75	
4	From butt of tree; diameter, 1¾ in. (Age, 3 years.)	36·25	68·35	
5	From butt of tree; diameter, 2 in. (Age, 4 years.)	36·5	64·25	
6	From butt of tree; diameter, 2½ in. (Age, 4 years.)	37·5	65·35	
7	From limb of No. 6	32·95	63·25	
8	From butt of tree; diameter, 4½ in. (Age, 5 years.)	37·25	64·5	No. 8, from the S.W. slope of the upper ranges; soil, light clay over bedrock of hard sandstone.
9	From limb of No. 8	38·5	66·2	
10	From butt of tree; diameter, 2 in. (Age, 4 years)	35·95	63·4	No. 10, from the top of upper range; soil, about 2 in. of light sandy loam over bedrock of hard sandstone.
11	From limb of No. 10	32·1	63·1	
12	From butt of tree; diameter, 3 in. (Age, 5 years.)	35·5	64·85	No. 12, from N.E. slope of upper range; soil, same as No. 10.
13	From butt of tree; diameter, 4 in. (Age, 7 years.)	35·45	63·5	No. 13, same as No. 8.

It will be noticed that in three cases, Nos. 2, 7, and 11, the results of analysis are slightly lower than that of the bark gathered from the butt of the same tree, but in the case of No. 9 the result is slightly higher; the appearance of the bark, when powdered, of No. 8 was too dark to be first-class, while that of No. 9 was the best of the whole thirteen samples, and gives the best result.

The powder from the bark of the limb is generally of a lighter colour than that taken from the butt, although the powders of Nos. 5, 10, and 12 were very light for bark taken from the trunk of the tree.

The bark of No. 3 was not first-class, being far too fibrous.

In Part III of the *Forest Flora of South Australia*, by J. E. Brown, occur the following analyses of this bark by Mr. G. A. Goyder, Superintendent of the Crown Lands Laboratory at Adelaide. The localities are all South Australian:—

Locality where grown, elevation, &c.	Character of Soil upon which grown.	Age of tree.	Weight of bark from each tree.	Thickness of bark.	Portion of tree which taken.	Percentage of Tannin.	Total extractive matter.
		Years.	lb.	in.			
Government Farm—							
Belair, elevation 1,000 feet.	Sandy loam, with clay subsoil.	6	45	0·22	trunk wood and bark of twigs.	34·0	55·3
Do do ...	do ...	6	...	...		5·1	20·5
Torrens Island—							
Almost sea-level ...	Deep sandy soil ...	5	38	0·23	Trunk	25·2	46·5
Do	do ...	5	...	0·04	Twigs	21·7	40·8
Bundaleer Forest—							
Elevation 1,800 feet ...	Ferruginous loam, with clay subsoil.	7	128	0·20	Trunk	31·4	49·9
Do do ...	do ...	7	...	0·05	Twigs	22·3	45·6
Semaphore—							
20 feet above sea-level ...	Deep sand	About 30	307	0·18 (*sic*)	Trunk	25·8	42·6
Brighton—							
20 feet to 30 feet above sea-level.	Clay soil	6	...	0·21	Trunk	28·7	53·4
Do do. ...	do	6	...	0·03	Twigs	25·3	41·6
Mount Gambier	Calcareous sand ...	7	...	0·13	Trunk	31·7	52·0

I am of opinion that these analyses underrate the value of *Acacia pycnantha* bark.

The following six barks of this species were forwarded to the Technological Museum by Mr. A. L. Thrupp, Balhannah, South Australia. They form a very interesting series, consisting as they do of samples of the best bark obtainable, together with very inferior and ordinary specimens, grown under varied influences of soil and climate:—

No. 1 is a splendid sample of the bark of this Wattle; it is thick, fairly smooth, and was taken from a tree of large diameter; it was grown at Mount Torrens, South Australia; analysed August, 1890, and found to contain 42·1 per cent. tannic acid, and 67·75 per cent. extract.

No. 2. This is also a good specimen of bark; it was grown at Oakbank, South Australia; analysed August, 1890, and found to contain 41·75 per cent. tannic acid, and 71·38 per cent. extract.

No. 3. Grown at Millicent, South Australia, in sandy soil; it was taken from a tree of fair size; analysed August, 1890, and found to contain 35·5 per cent. tannic acid, and 68·9 per cent. extract.

No. 4. This is an inferior-looking bark, scaly and fibrous; it was taken from trees growing in scrub country near Blumberg, South Australia; analysed August, 1890, and found to contain 30 per cent. tannic acid, and 59·6 per cent. extract, which result must be considered good from such an unpromising looking bark.

No. 5. Grown at Melrose, South Australia. The bark is from young trees, and not at all promising in appearance. It was analysed August, 1890, and found to contain 21·2 per cent. tannic acid, and 42·3 per cent. extract.

No. 6. This is a thin, fibrous, scaly, and very inferior-looking bark, taken from trees growing at Carruson, South Australia, where, owing to insufficient rainfall, they are stunted in growth; analysed August, 1890, and found to contain 15·1 per cent. tannic acid, and 32·75 per cent. extract.

Timber.—It is of no importance as a timber. After the bark is stripped, the wood is sometimes used for fuel, for which it is excellent.

It has been called a tough and close-grained wood. Its specific gravity is about ·83, that is, the weight of a cubic foot of the wood is about 51½ lb. (Osborne).

Size.—Average height of typical form, 20 to 25 feet; and diameter, 6 to 10 inches. (Brown.)

Habitat.—It is confined to South Australia, Victoria, and New South Wales. In our own State it is confined to country, so far as is known, adjacent to Victoria and South Australia. It is only, as regards New South Wales, represented in the National Herbarium, Sydney, from Tocumwal. We look upon this species as so essentially South Australian that we often forget that the type comes from "Interior of N. S. Wales" (Mitchell), although Bentham, in the *Flora Australiensis*, omits to record it as a New South Wales plant. Perhaps, however, Major Mitchell collected it in Victoria before its separation from New South Wales.

This Wattle has been acclimatised in many districts of New South Wales, so much so that it is often looked upon as indigenous in localities in which it has been planted.

It is so valuable that it should be still further cultivated in localities approximating in conditions to those of the Mount Lofty Range near Adelaide. The day is passed when theorists may allege that it will not flourish in the Port Jackson district.

I have seen excellent specimens growing as far west as Coolabah, near Bourke. It is handsome enough to grow for purely ornamental purposes.

It should supplement *Acacia decurrens*, our most generally diffused and most generally useful tanning Wattle for New South Wales conditions.

Mr. J. E. Brown, when in South Australia, cultivated this species very largely in districts found suitable for it, and his general remarks on Wattle cultivation were chiefly written with this species in view.

> Except in very dry localities, this species is common to nearly all districts of South Australia north of Encounter Bay, and is occasionally to be met with along the coast from Kingston to the Glenelg River. Its principal habitat, however, and the one where the thoroughly typical botanical form and the largest trees of the species are found, is in the Adelaide hills and plains, from Encounter Bay to Clare. For propagation purposes seed should, if possible, be obtained from trees grown within these limits. In some parts of the north of the Colony there is a narrow-leaved variety, with the stem and branches covered with a whitish substance, which is desirable should not be propagated, as the tree is of slow growth, and does not attain payable dimensions.—(J. E. Brown. Reports.)

Baron von Mueller (*Select Extra-tropical Plants*) says :—

> It is of rapid growth, content with almost any soil, but is generally found in poor, sandy ground, near the sea coast, and thus also important for binding rolling sand.

Generally speaking, it loves a warm climate, with only a moderate rainfall. It, therefore, will not usually flourish at elevations over 2,000 feet.

It is essentially a South Australian species, though it extends into both Victoria and New South Wales.

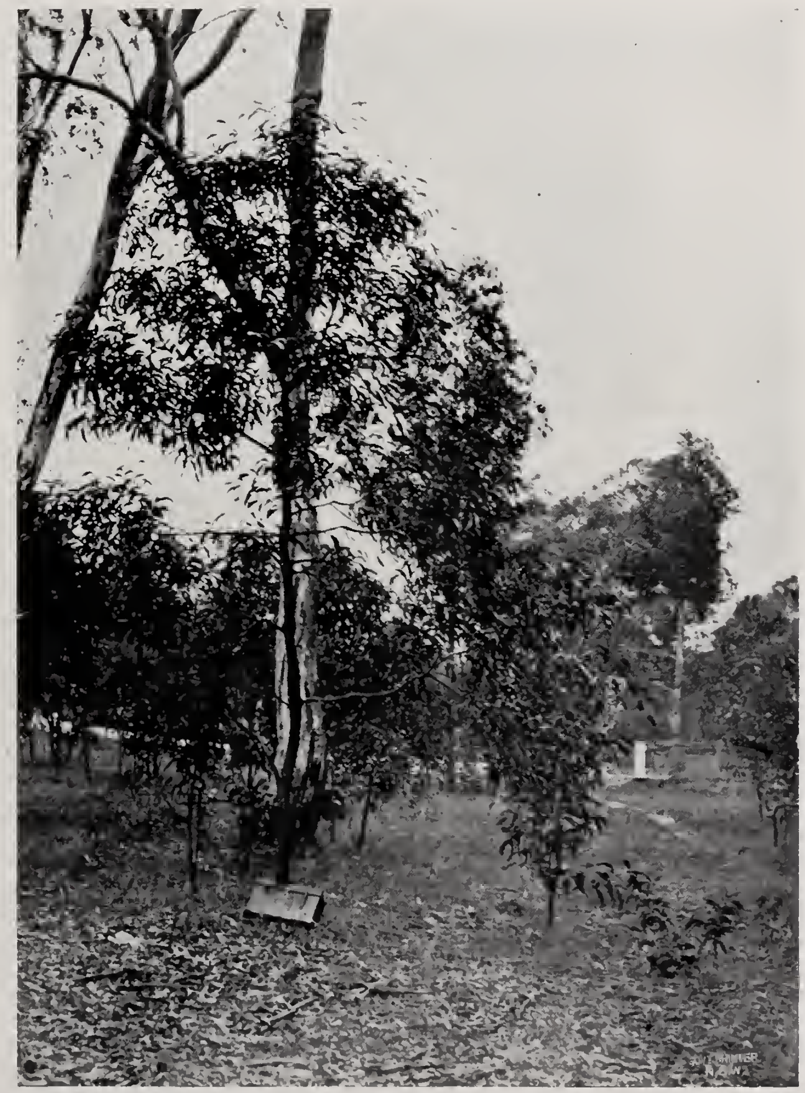
Propagation.—Readily from seed.

Mr. G. S. Perrin summarises the advantages of this species over *A. decurrens* by stating that the former species is more amenable to culture, and can be pruned to a better shape, occupies less space in the plantation, and is much better stripped.

So-called delicate plants, such as this species, may be successfully grown in rather cold districts, *e.g.*, Blue Mountain, Moss Vale, &c., in New South Wales, by taking advantage of a fact well known to gardeners, namely, they should be planted with a westerly aspect, so that the sun will not shine on them too early after a severe frost.

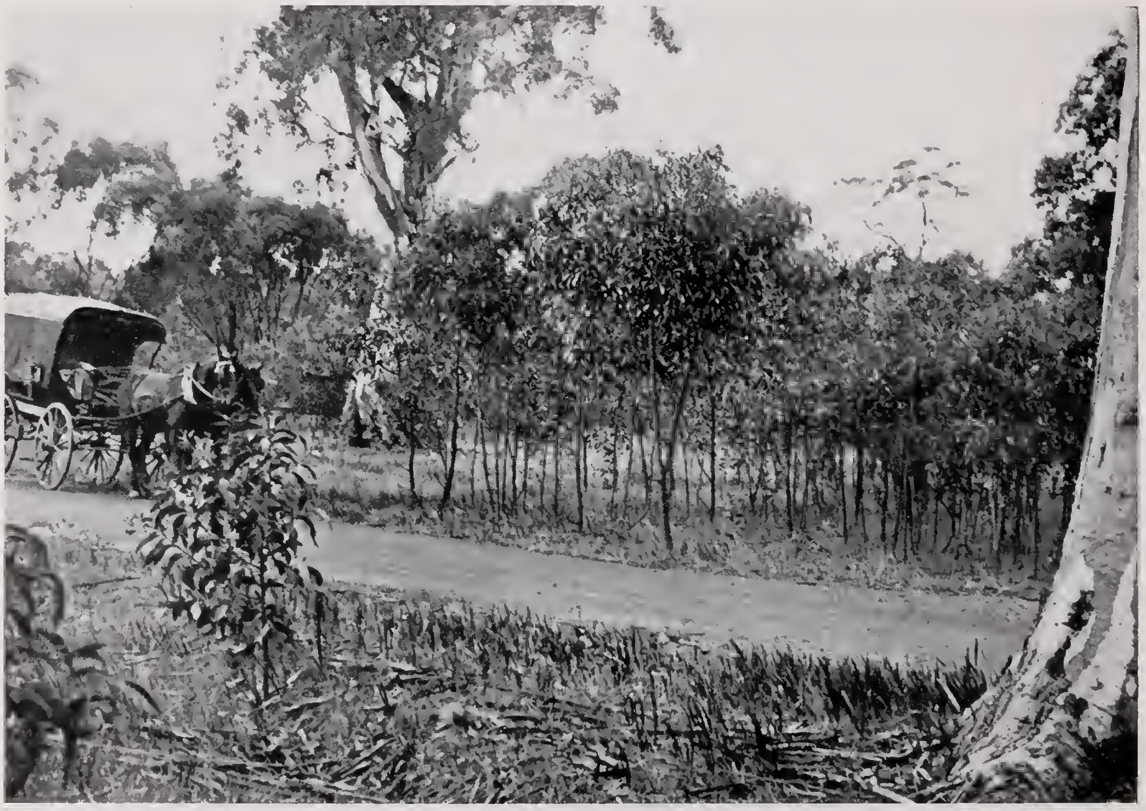
A New Zealand correspondent writes :—" *Pycnantha* trees, 4 years old, are 6 feet high, and 2 inches in diameter at 3 feet from the ground, in the Auckland district of New Zealand. Land rather strong, with sand in it, and on a clay subsoil."

In another instance in this district, the scrub was cut, the land ploughed in strips, 10 feet apart, and the seed drilled in at the rate of 1 lb. to the acre. Since then the trees have been allowed to grow wild, never having been thinned or the land cleared, or, in fact, having one penny spent on them. In six years the best trees were over 10 feet high, and 3½ inches in diameter, and the *decurrens* trees were over 20 feet high, and 5 inches in diameter.



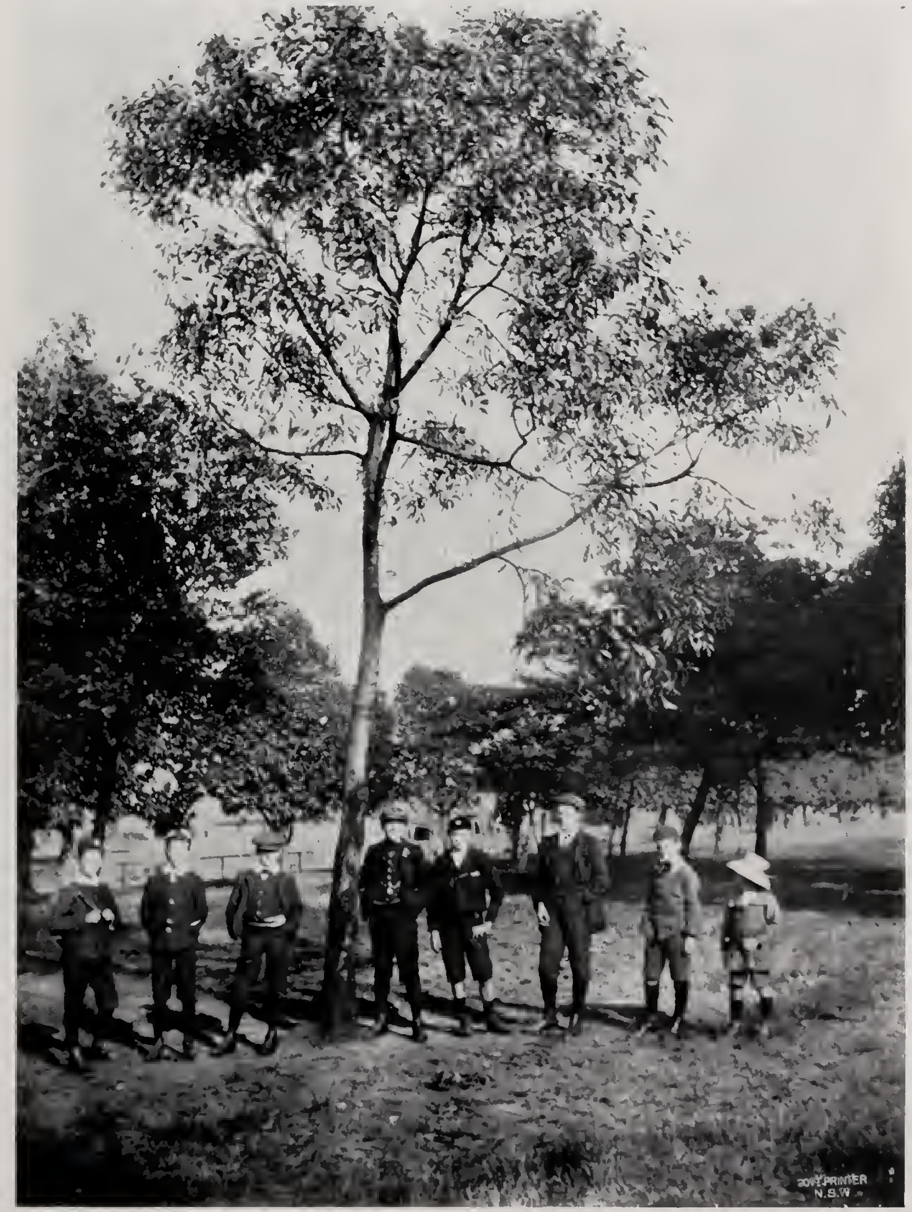
W. Gill, photo.

RATHER LARGE TREE OF *Acacia pycnantha.* NATIONAL PARK, BELAIR, NEAR ADELAIDE.



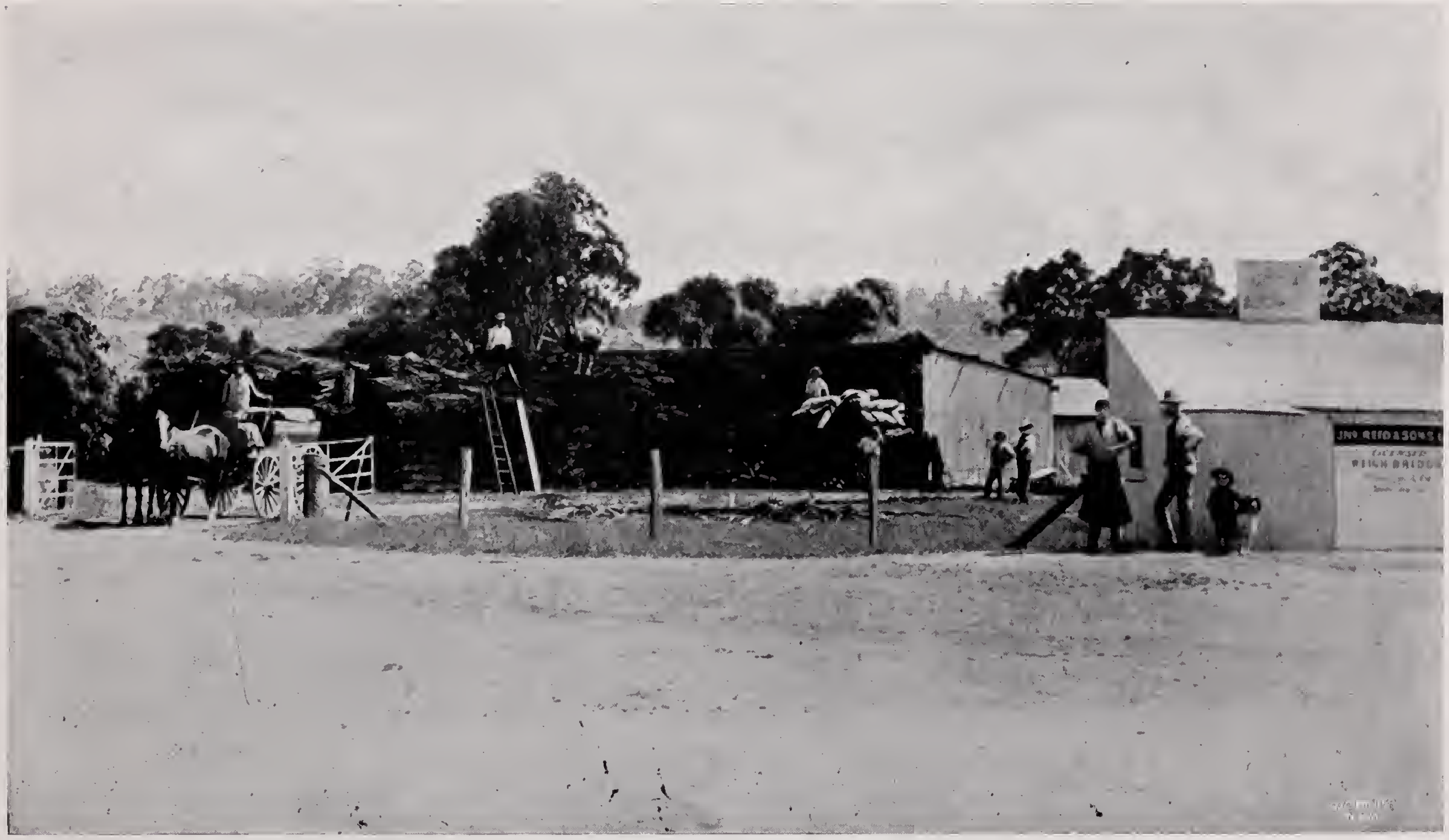
W. Gill, photo.

ORDINARY GROWTH OF *Acacia pycnantha.* NATIONAL PARK, BELAIR, NEAR ADELAIDE.

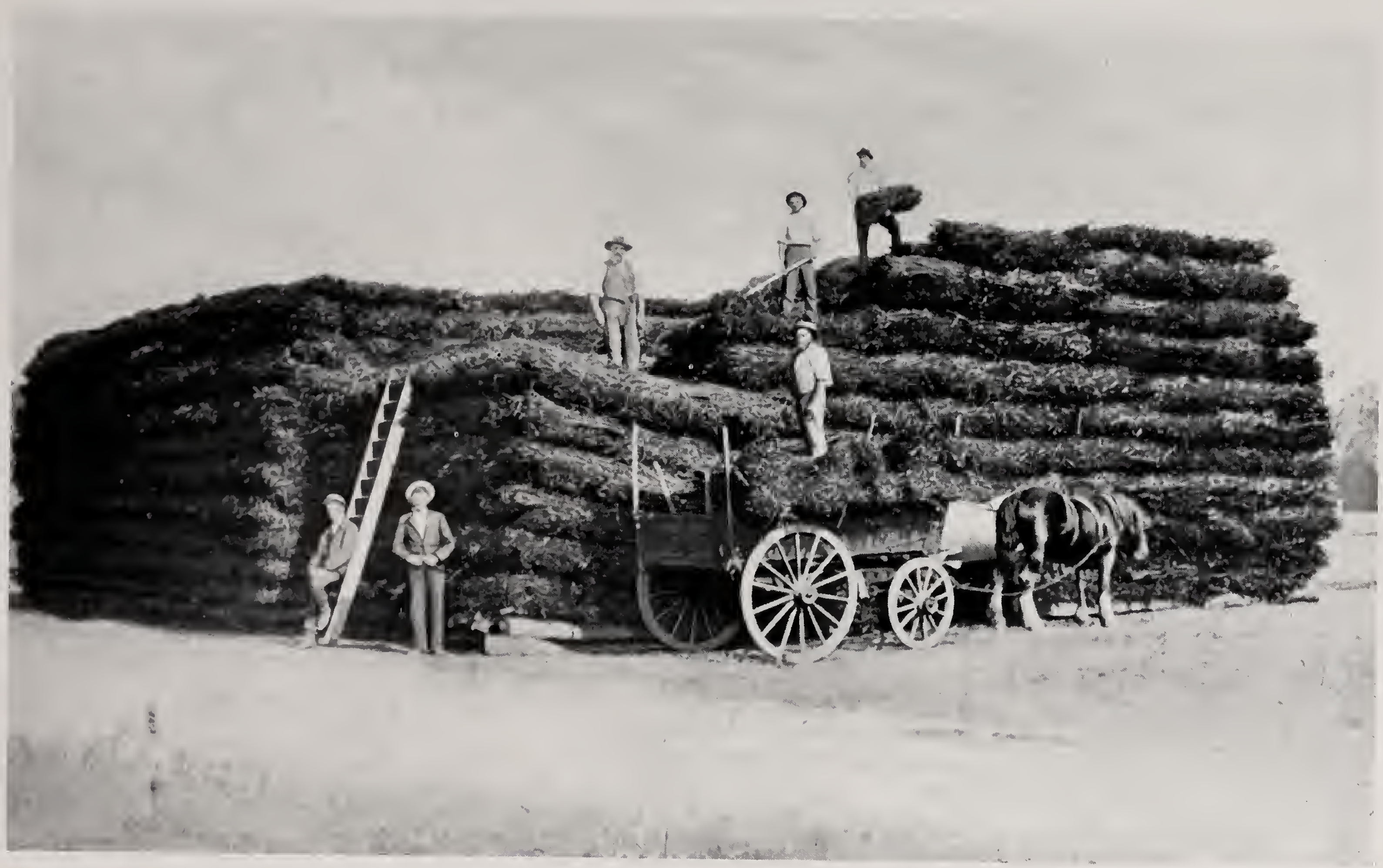


R. H. Cambage, photo.

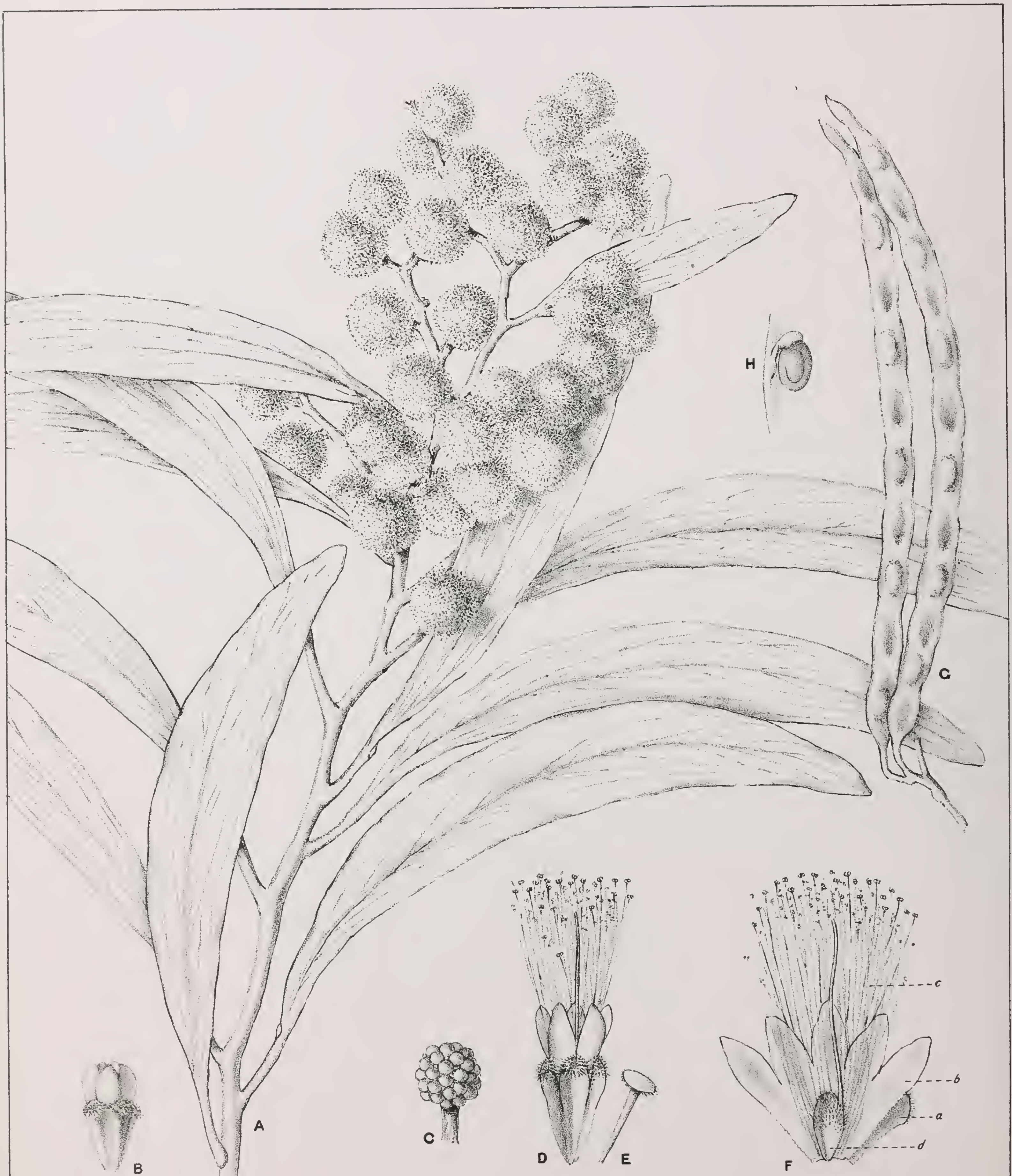
CULTIVATED TREE OF *Acacia pycnantha.* BURWOOD PARK, NEAR SYDNEY.



BARK DEPÔT (*Acacia pycnantha*). BALHANNAH, MT. LOFTY RANGE, NEAR ADELAIDE.



STACK OF *Acacia pycnantha* BARK (JOHN REID & SONS), ECHUNGA, MT. LOFTY RANGE, NEAR ADELAIDE.



BROAD-LEAVED WATTLE.

(*Acacia pycnantha*, BENTH.)

Mr. Brown gives the life of this tree at from ten to twelve years, and states that it may be stripped from the sixth to the ninth year, according to circumstances. It lives longer in sandy soils than in clay ones.

EXPLANATION OF PLATE 107.

A. Flowering branch.

B. Flower-head.

C. Individual bud.

D. Flower.

E. Bract.

F. Flower, opened out, showing—
  (*a*) Calyx.
  (*b*) Corolla.
  (*c*) Stamens.
  (*d*) Pistil.

G. Pods.

H. Seed.

Photographic illustrations of *Acacia pycnantha*:—

1. Rather large tree, National Park, Belair, near Adelaide (W. Gill, photo.).
2. Ordinary growth, National Park, Belair, near Adelaide (W. Gill, photo.).
3. Cultivated tree, Burwood Park, near Sydney (R. H. Cambage, photo.).
4. Bark Depôt, Balhannah, Mt. Lofty Range, near Adelaide (John Reid & Sons).
5. Stack of Bark, Echunga, Mt. Lofty Range, near Adelaide (John Reid & Sons).

No. 104.

Cryptocarya microneura, Meissn.

The Murrogun.

(Family LAURACEÆ)

Botanical description.—Genus, *Cryptocarya*, R.Br., *Prodromus*, 258. (See Part III, p. 72, of this work.)

Botanical description.—Species, *C. microneura*, Meissn. in DC. *Prod.* xv, 73 (1864).

Following is a translation of the original description:—

Leaves coriaceous with an attenuate base, elliptical-oblong, acuminate, and somewhat acute, with prominent primary veins on both sides, and minutely reticulate, glabrous, uniformly coloured on both sides.

Panicles clustered, greyish silky-hairy, with nearly glabrous peduncles.

South-eastern Australia (Fraser, A. Cunningham, Macarthur, Backhouse). A tree 15 feet high, according to Cunningham, 30 feet according to Fraser, and 50 to 70 feet according to Macarthur.

Branches slender, punctate with warts, the apex angular compressed and minutely hairy (puberulous), the bark somewhat bitter aromatic.

Leaves somewhat shining above, 4 to 6 inches long, 1½ inches broad, the petiole 3 to 5 lines long, flat above; veins immersed on the upper side, the primary veins half-spreading, the upper ones thin and becoming obsolete, curved and connected.

Panicles axillary and terminal, 1 to 5 inches long, shortly pedunculate, surpassed by the leaves, branches compressed angular, the lowest 1 to 1½ inches long, racemose, the short branchlets cymose, 3-to 5-flowered.

Calyx longer than the pedicel, 1½ inches long, the lobes ovate, spreading, slightly longer than the ovoid tube.

Fruits not known. (Since discovered; see below).

I repeat the description of *C. microneura* given by Mr. Baker and myself in *Proc. Linn. Soc. N.S.W.*, 1895, p. 515.

A tree over 60 feet high, glabrous except the inflorescence, which is always hoary-pubescent. Leaves broadly lanceolate, acuminate, obtuse, glabrous on both sides, a shade darker on the upper side, primary veins and reticulations equally distinct on both sides, reticulations fine but more distinct than in *C. glaucescens*, 6 inches long and 1 broad; petiole short, less than ½ inch. Flowers very numerous, mostly terminating in a large irregular panicle, but sometimes axillary. Perianth under 1 line, hoary pubescent, the tube turbinate, about equal to the lobes. Glands stipitate at the mouth of the tube. Staminodia scarcely sessile as in *C. glaucescens*, and very much more acuminate. Fruiting perianth ovoid-oblong, 6–8 lines long, dark, shining, faintly ribbed.

Brief Analysis showing Relations to Cognate Species.

Leaves *thickly coriaceous*, smooth, shining above, the primary veins very prominent underneath, the reticulations inconspicuous.

Fruit globular. C. obovata.

Leaves more or less coriaceous, the reticulations fine, conspicuous or obsolete on both sides.

Fruit globular. C. glaucescens.

Leaves thinly coriaceous, the reticulations fine on both sides.

Fruit ovoid-elliptical. C. microneura.

C. glaucescens and *C. microneura* are found intermingled in the brushes along the whole northern coast districts of this Colony as well as Illawarra, and their distinct character (without any intermediate forms that we can trace) is maintained throughout.

This species differs from *C. glaucescens* in colour, texture and shape of its leaves, in its absence of glaucousness, and particularly in the shape of its fruits. The reticulations are also more prominent than in the former species, and the specific name is very appropriate. The staminodia are also more acuminate. The fruiting perianth is entirely distinct; in *C. glaucescens* it is "depressed-globular," a shape uniformly maintained throughout the whole range of the typical species, but in this species it is ovoid-elliptical and consistently so. It measures about 6–8 lines long and 3–4 broad, is black and shining, and faintly ribbed, The fruits of *C. microneura* have not hitherto been described. In fine, we have repeatedly examined the two species in the brushes from Illawarra to Port Macquarie, and have requested Mr. Baeuerlen, the botanical collector of the Museum, to make similar observations on the Richmond River. Our observations agree in that we are convinced that the trees are distinct.

Botanical Name.—*Cryptocarya* (see Part III, p. 73); *microneura*, from two Greek words, *mikros*, small or fine, and *neuron*, a nerve or vein, in allusion to the fine reticulation of the veins of the leaf.

Vernacular Name.—I know of none exclusively applied to this tree. The late Sir William Macarthur says that this tree was called "Yellow Wood" in the Illawarra, and Teak in the Brisbane Water district, but both these names should be reserved for other trees, as has been shown in previous Parts of this work.

Mr. R. H. Cambage says that it is called "Brown Jack" at West Dapto, because of the colour of its bark.

Aboriginal Name.—"Murrogun" is the name formerly applied by the aborigines of the Brisbane Water district, according to the late Sir William Macarthur. I have accordingly ventured to suggest this for adoption.

Synonym.—*Cryptocarya glaucescens*, R.Br., var. *reticulata*, Meissn., *op. cit.*, p. 73.

Timber.—The late Sir William Macarthur described this timber in the following words in collecting New South Wales timbers for the London Exhibition of 1862.

> A noble tree, with lofty cylindrical stem, and ample head. Wood hard, close, and fine in grain, duramen dark coloured, and frequently very handsome, with a powerful aromatic fragrance throughout. Common at Brisbane Water, and said to be a very valuable timber.

Like a good many of our brush timbers, it has not been critically examined. It is pale-coloured, yellow when fresh, of moderate hardness and weight, and with but little figure. It is closely related to the Bolly Gum, and is probably a useful substitute for that timber.

Size.—A tree of medium size, attaining a height of 50 or 60 feet, and a stem diameter of, say, a couple of feet.

Habitat.—Following are the localities for this tree given by Bentham (following Meissner) :—

Seaview Range, *Fraser;* Hastings River, *C. Moore;* Illawarra, *A. Cunningham;* Sydney Woods, Paris Exhibition, 1855, *C. Moore*, n. 5, *Macarthur*, n. 198, 224, 234.

Mr. Moore's No. 5 came from the Richmond River.

No. 198 was Macarthur's "Yellow-wood." No. 224 was Macarthur's "Teak-wood," and labelled *Endiandra glauca* in the Paris and London Exhibition lists. No. 234 is described as "a small tree, yielding yellowish-brown wood, with dark veins, apparently related to 198."

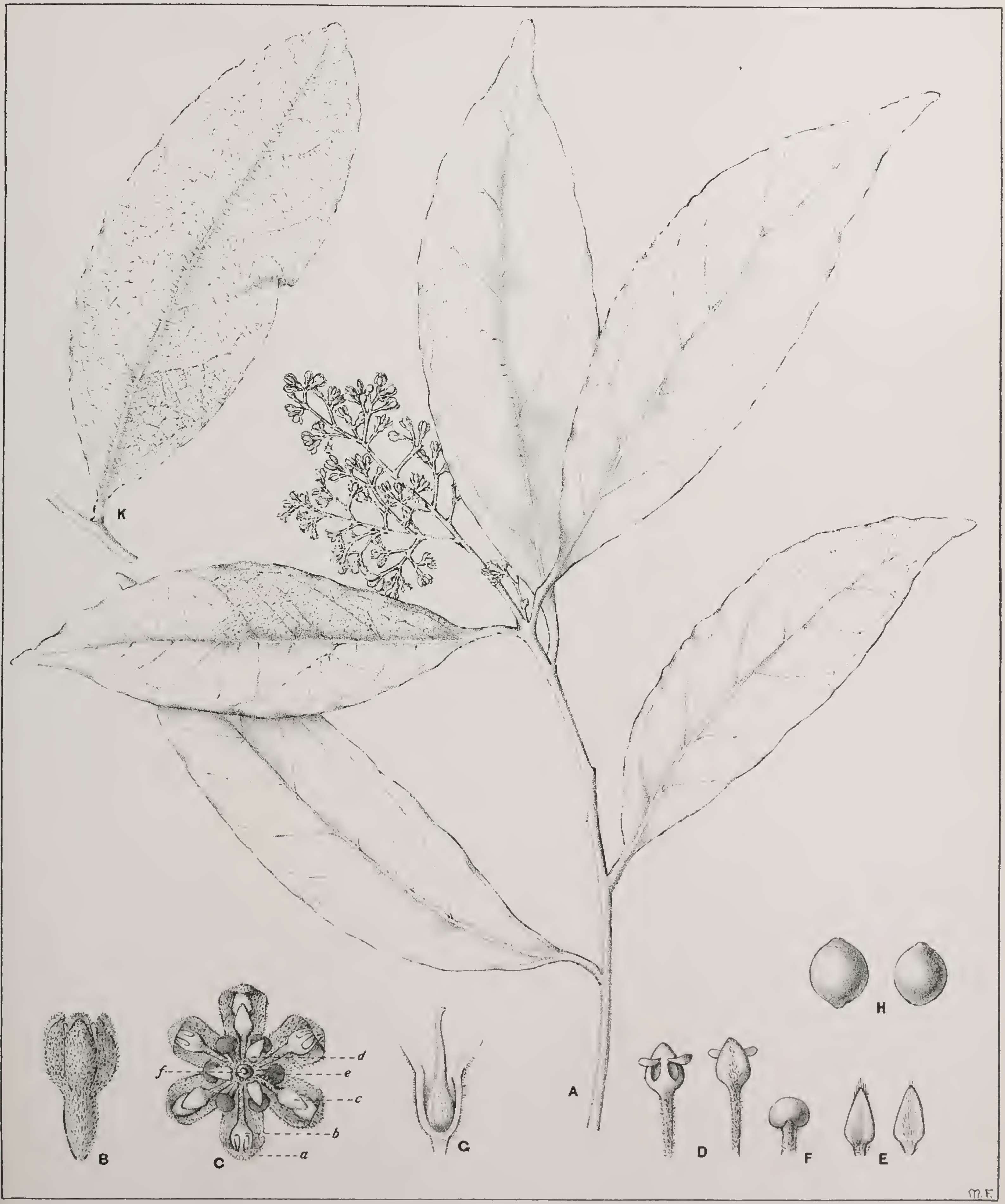
C. microneura is an inhabitant of brushes throughout the greater part of coastal New South Wales, and, as Queensland is approached, it is found in mountain brushes at a considerable distance from the sea.

In New South Wales we have it from Cambewarra Mountain, Kangaroo Valley, and the Foxground (Kiama), these being the most southerly localities known to me.

In Queensland it does not appear to have been recorded further north than "Southern brushes."

EXPLANATION OF PLATE 108.

A. Flowering branch.
B. Young flower.
C. Flower, opened out, showing—
    (*a*) Calyx (Perianth segment).
    (*b*) Stamens, outer row.
    (*c*) „ inner row.
    (*d*) Staminodia, inner row.
    (*e*) „ outer row.
    (*f*) Stigma.
D. Anthers, dehiscing by two valves; front and back view.
E. Staminode, inner row.
F. „ outer row.
G. Pistil.
H. Fruits (not quite ripe) from Port Macquarie.
K. Leaf from a specimen from Hastings River, near Mount Seaview (*i.e.*) Upper Hastings from locality quoted by Bentham, B.Fl. v, 297, to show venation.



THE MURROGUN.

(*Cryptocarya microneura*, MEISSN.)

TO MY READERS—

I shall be very grateful if my readers will favour me with photographic tree-portraits, to add to the practical utility and interest of this work.

A Critical Revision of the genus Eucalyptus.[*]

This work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets).

Eucalyptus amygdalina, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber (V).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

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[*] Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1907.

Volume II (Parts XI–XX).

Part XI (Issued September, 1904).

No. 39.—The Forest Red Gum (*Eucalyptus tereticornis*, Sm.).
No. 40.—The Black Apple (*Sideroxylon australe*, Benth. et Hook., f.).
No. 41.—The Smooth-barked Apple (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

Part XII (Issued November, 1904).

No. 43.—The Bloodwood (*Eucalyptus corymbosa*, Sm.).
The Cypress Pines of New South Wales (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

Part XIII (Issued November, 1904).

No. 52.—The Mugga; a Red Ironbark (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—The Native Elm (*Aphananthe philippinensis*, Planch.).
No. 54.—The Belah (*Casuarina lepidophloia*, F.v.M.).
No. 55.—The Western Rosewood (*Heterodendron oleæfolium*, Desf.)

Part XIV (Issued February, 1905).

No. 56.—The Gruie or Colane (*Owenia acidula*, F.v.M.).
No. 57.—The Black Sally (*Eucalyptus stellulata*, Sieb.).
No. 58.—The Swamp Oak (*Casuarina glauca*, Sieb.).
No. 59.—A Deciduous Fig (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

Part XV (Issued March, 1905).

No. 60.—The Blackwood (*Acacia melanoxylon*, R.Br.).
No. 61.—A White or Cabbage Gum (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—The River Oak (*Casuarina Cunninghamiana*, Miq.).
No. 63.—The Western Whitewood (*Atalaya hemiglauca*, F.v.M.).

Part XVI (Issued June, 1905).

No. 64.—The Weeping Myall (*Acacia pendula*, A. Cunn.).
No. 65.—A Peppermint (*Eucalyptus amygdalina*, Labill.).
No. 66.—The Forest Oak (*Casuarina torulosa*, Ait.).
No. 67.—The Ivory Wood (*Siphonodon australe*, Benth.).

Part XVII (Issued October, 1905).

No. 68.—The Drooping She-Oak (*Casuarina stricta*, Ait.).
No. 69.—The River White Gum (*Eucalyptus numerosa*, Maiden).
No. 70.—The Native Teak (*Flindersia australis*, R.Br.).
(*Two Plates.*)

Part XVIII (Issued November, 1905).

No. 71.—The Cudgerie (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—The Giant Gum Tree (*Eucalyptus regnans*, F.v.M.).
No. 73.—The Black She-Oak (*Casuarina suberosa*, Otto et Dietr.).

Part XIX (Issued January, 1906).

No. 74.—The Yellow-wood (*Flindersia Oxleyana*, F.v.M.).
No. 75.—The Broad-leaved Peppermint (*Eucalyptus dives*, Schauer.).
No. 76.—The Bull Oak (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

Part XX (Issued July, 1906).

Recapitulatory (Sixteen Plates).

Volume III.

PART XXI (ISSUED AUGUST, 1906).

No. 77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.).
(*Two Plates.*)
No. 78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
No. 79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII (ISSUED FEBRUARY, 1907).

No. 80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey).
(*Two Plates.*)
No. 81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
No. 82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII (ISSUED MARCH, 1907).

No. 83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
No. 84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
No. 85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.).
(*Two Plates.*)

PART XXIV (ISSUED MAY, 1907).

No. 86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
No. 87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
No. 88.—The Mountain Hickory (*Acacia penninervis*, Sieb.).
(*Two Plates.*)

PART XXV (ISSUED JUNE, 1907).

No. 89.—The Rosewood (*Dysoxylon Fraseranum*, Benth.), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
No. 90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
No. 91.—The Two-veined Hickory (*Acacia binervata*, DC.).
No. 92.—The White Cedar (*Melia Azedarach*, L., var. australasica, C. DC.).

PART XXVI (ISSUED SEPTEMBER, 1907).

No. 93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
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THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 9.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXIX.

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No. 105.

Synoum glandulosum, A. de Jussieu.

The Bastard Rosewood.

(Family MELIACEÆ.)

Botanical description.—Genus, *Synoum*, A. de Juss., in *Mém. du Mus. Par.*, xix, 226 (1830).

Calyx 4- rarely 5-cleft.

Petals 4, rarely 5, valvate or slightly imbricate in the bud.

Staminal tube cylindrical, slightly crenulate.

Anthers.—Twice as many as petals, within the summit of the tube.

Disc continuous with the thickened base of the ovary.

Ovary 3-celled; style short, with a disc-like stigma.

Ovules.—2 in each cell, attached collaterally to a thickish placenta pendulous from the apex of the cavity.

Capsule 3-celled, opening loculicidally in 3 valves, or reduced by abortion to 2 valves and cells.

Seeds.—2 in each cell, attached by a broad lateral hilum, and half embedded collaterally in a fleshy arillus formed by the enlarged placenta.

A tree.

Leaves pinnate, with entire leaflets.—(B.Fl. i, 384.)

Botanical description.—Species, *S. glandulosum*, A. de Juss., in *Mém. Mus. Par.*, xix, 227, t. 15 (1830).

A moderate-sized tree, glabrous or the young leaves and shoots slightly silky-tomentose.

Leaflets 5 to 9, elliptical-lanceolate, acuminate, mostly 2 to 3 inches long, narrowed at the base, somewhat coriaceous, the lateral veins few and scarcely prominent.

Flowers in short dense, axillary panicles, rarely exceeding 1 inch.

Sepals small, orbicular, spreading.

Petals about 2½ lines long.

Staminal tube broad, slightly crenulate, glabrous or with a few hairs inside.

Anthers sometimes slightly protruding.

Ovary villous.

Capsule depressed-globular, glabrous, about ¾ inch diameter, furrowed opposite the dissepiments so as to be almost 3-lobed.—(B.Fl. i, 384.)

Botanical Name.—*Synoum*, from two Greek words, *sun* (*syn*) with, signifying, in botany, adhesion or growing together, and *oum* (Latin *ovum*) an egg, in botany the ovule or young seed in the ovary, the organ which after fertilization develops into the seed; *glandulosum*, Latin, *glandular*, in allusion to the "glandular veins." See below, and also see figure II on the plate. They are what modern botanists know as *domatia.* I do not know whether attention has been drawn to them in this species since Sir J. E. Smith's time. An explanation of domatia will be found at page 83, Part XXV of this work, under *Dysoxylon Fraseranum.*

Vernacular Name.—The late Mr. Alfred Cadell, writing from Coramba, called it "Bog Onion." He spelled it "Boggunnyan," and thought it was an aboriginal word.

At Acacia Creek, Macpherson Range, it is known as "Rosewood" or "Bastard Rosewood."

The late Sir William Macarthur stated that it was known as "Dogwood" and "Bloodwood."

Called "Rosewood" or "Scrub Mahogany" in southern Queensland.

Aboriginal Name.—It was known as "Wallaon" by the aborigines of the Illawarra, according to the late Sir William Macarthur.

Synonym.—*Trichilia glandulosa*, Sm., in Rees' Cycl., xxxvi (1819).

This is the earliest printed description of the plant, which was, as already stated, put into the genus *Synoum* by A. de Jussieu. Smith's account of the plant is of special interest to Australians, and as it is not generally known in Australia I reproduce it.

T. glandulosa.—Glandular-veined Trichilia. Leaves pinnate; leaflets five or seven, elliptic-lanceolate, bluntly pointed, with axillary hairs on their veins beneath. Petals four. Nectary undivided. Stigma depressed. Native of New South Wales, near Port Jackson. A specimen from thence was communicated to us by Sir Joseph Banks, under the name of *T. octandra* of Solander, which not being published, we presume to change, as the octandrous species of this genus are numerous, though this only was then known to the great botanists who first discovered it. The *leaves* agree nearly with *T. heterophylla* in size and shape, but are all pinnate, and remarkable for axillary glands, bearing tufts of hairs along the midrib of each *leaflet* beneath, as in the Laurustinus, of which we perceive no indications in any other species, except, perhaps, the first (*T. hirta*). *Clusters* axillary, solitary, stalked, an inch or two in length, simple, of few *flowers*. *Calyx* four-cleft, minutely fringed. *Petals* four. *Nectary* undivided. *Anthers* eight, sessile. *Stigma* capitate, broad. *Capsule* triangular, depressed, with three deflexed lobes. *Seeds* in a red, pulpy, elastic tunic.

Mr. James Britten* in his fine work has reprinted Solander's MS. description of *T. octandra*, which is given herewith. At t. 37 he has reproduced Nodder's drawing (dated 1777) of *Synoum glandulosum*, which is, of course, the same as *T. octandra.*

Calyx 4-phyllus: *foliola* lata, oblonga, $\frac{1}{2}$ lin., pallide rubicunda, æqualia. *Petala* 4, crassiuscula, oblonga, obtusa, patula, intus alba, extus pallide rubicunda, 3-linearia. *Nectarium* cylindraceum, tubulosum, obtuse 4-gonum, consistentia petalorum, e rubicundo albidum, erectum, petalis $\frac{1}{3}$ brevius, margine 16-dentatum, denticulis minutis, alternis (quæ supra antheras) obsoletis. *Filamenta* 0. *Antheræ* 8, sessiles, insertæ nectaro paulo infra marginem, lanceolatæ, erectæ, non vero supra marginem elevatæ, luteæ. *Germen* superum, orbiculatum. *Stylus* conico-filiformis, crassiusculis, erectus, nectario paulo longior, albus. *Stigma* crassum, suborbiculum, supra planum, integrum. *Pericarpii* capsula subglobosa, obtuse 3-gona, trilocularis, 3-valvis. *Semina* 2 in singulo loculo, ovato-oblonga, intus plana, extus convexa, majuscula. Obs. Inter semina corpusculum crassum, album, a seminibus distinctum seminaque separans. Flores suaveolentes.

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[*] "Illustrations of the Botany of Captain Cook's Voyage Round the World in H.M.S. 'Endeavour' in 1768-71." Part I. "Australian Plants." Published by the Trustees of the British Museum, 1900.

The specimens on which Smith's description was founded were sent to him by Banks under Solander's MS. name *T. octandra*, "which not being published we presume to change, as the octandrous species of the genus are numerous, though this only was then known to the great botanists who first discovered it." (*Rees' Cyclop.*, xxxvi.) Banks' specimens, which are not referred to by Bentham, are from Botany Bay.

Leaves.—Specially note the domatia on the leaves already referred to.

Flowers.—Of a white or blush-pink colour.

Fruit.—When the capsule opens, the bright red seeds afford a very ornamental appearance.

Timber.—It is not a timber of the first importance, because of its small size.

Following are two descriptions of it:—

"It is a pleasant-looking wood, and closely allied to Rosewood, although the sweet odour of the latter is absent; yet the wood of *S. glandulosum* is not so dense, and should be useful for furniture-making and for any fancy trimmings connected with buildings, or for the manufacture of dairy utensils where strong and light vessels are required."—(W. Dunn.)

"Rosewood or Scrub Mahogany (*Synoum glandulosum*). A limited quantity in some of the mountain scrubs in southern Queensland. Fairly plentiful on Mistake Mountains and on the western side of that range southerly to Wilson's Peak, on the Macpherson Range.

"A large tree, the trunks of which are often crooked; bark rough and scaly; wood fragrant, of a red colour, much resembling Cedar, but heavier, and fairly easy to work. A very pretty timber, and durable.

"Used for general building purposes; cabinet-work, joinery, and turnery."—*Cat. Queensland Forestry Museum*, 1904.

Size.—Under favourable circumstances a small tree of about 30 feet, but in many localities often only a tall shrub.

Habitat.—Following are the localities given in the *Flora Australiensis* :—

NEW SOUTH WALES.

"Sandy shores about Port Jackson (R. Brown and others); to the southward (A. Cunningham); inland to the Blue Mountains (Miss Atkinson); northward to Hastings River (Beckler)."

It is essentially a brush tree and is found over the greater part of coastal New South Wales. I have seen it as far south as Milton; I daresay it occurs much further towards the Victorian border.

It is found in the brushes of the Macpherson Range on both the New South Wales and the Queensland sides. Mr. F. M. Bailey records it from Eumundi, Queensland.

It is rather common about Cook's Landing Place, Botany Bay, where, indeed, the specimen collected by Banks and Solander was obtained.

EXPLANATION OF PLATE 109.

A. Flowering branch.

B. Flower-bud.

C. Expanded flower.

D. Flower, opened out, showing—
  - (*a*) Calyx.
  - (*b*) Petals.
  - (*c*) Staminal tube with ten anthers.
  - (*d*) Ovary.
  - (*e*) Stigma.

E. Anther, attached to portion of the staminal tube.

F. Fruit (capsule).

G. Seed.

H. Portion of leaf showing the domatia in the axil of each vein.

APPENDIX TO MELIACEÆ.

Note on Turraea pubescens, Hellen.

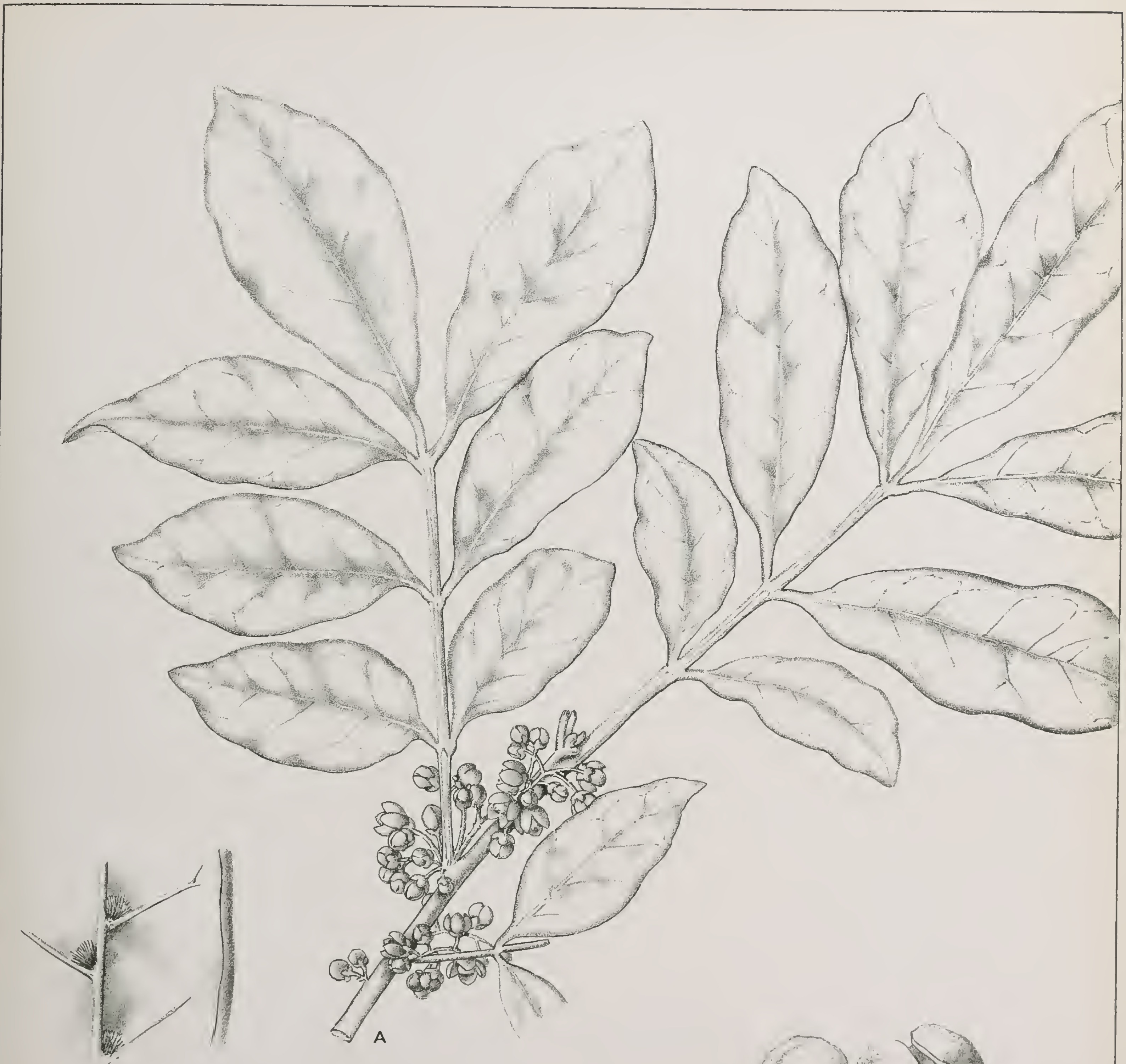
In Mueller's *Second Census of Australian Plants,* this plant is admitted as a New South Wales species.

In answer to my inquiry, Professor Ewart, of Melbourne, writes:—

> The only record of this plant from N.S.W. in our herbarium is Pine River, "N.S.W." (Fitzalan). This specimen was seen by Bentham, who classed it as a Queensland locality.

Fitzalan only collected in Queensland so far as I am aware, and Pine River is in Queensland.

The record of the tree from New South Wales is a simple clerical error, and should be dropped.



BASTARD ROSEWOOD.

(*Synoum glandulosum*, A. DE JUSS.)

No. 106.

Eucalyptus eugenioides, Sieb.

A White Stringybark.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. eugenioides,* Sieb., in Sprengel's *Curæ Posteriores,* iv, 195 (1827).

The species may be defined as follows :—

Juvenile foliage.—Specimens of the type (Sieber's No. 479) are just—only just—past the opposite stage. They are lanceolate, under ¾ inch wide at the outside, and up to 2½ inches long. Venation strongly marked. Leaves undulate and young shoots warty. (Figured at A on the plate.)

Mueller has figured* the juvenile foliage of the species in the *Eucalyptographia,* and I accept it as certainly belonging to the species, although the figure would have had enhanced value had the locality of the specimen been given.

Mature leaves.—These are generally much thinner and more delicate in texture than those of *E. capitellata* and *E. macrorrhyncha ;* the leaves are sometimes very shiny and much thicker than others. They are also of a richer green, more shapely, graceful and *Eugenia*-like, a circumstance which led to the adoption of the specific name.

Buds.—The buds are clustered and often very much crowded into heads, by which the inflorescence assumes a very marked character. They always have pointed opercula, but rarely angular, as in *E. capitellata,* the points being sometimes so marked as to approach those of *E. macrorrhyncha,* but they are then fuller on the top, and do not show such a prominent edge at the base of the operculum. Sometimes, *e.g*, Sydney to Blue Mountains, they are arranged in a stellate manner.

Fruits.—Sieber having distributed no fruits with his type, I attach the following description of fruits from trees in the Sydney district, which have juvenile and mature leaves and flowers practically identical with the type :—

They are nearly hemispherical, with the valves slightly exsert ; but nearly globular fruits with the valves sunk, and the orifice constricted, may be taken off the same tree. Occasionally the fruit is quite flat-topped. The rim is often red, as red as those of *E. hæmastoma* ever are. They are slightly pedicellate, often crowded into more or less globular heads, but rarely compressed like those of *E. capitellata.*

---

* Mueller's figure shows a leaf longer than broad ; in *E. capitellata* we have a distinctly broad leaf. In some forms referable to *E. eugenioides* we have a very narrow leaf. I have no hesitation in saying that a narrow juvenile leaf is the standard or type for *E. eugenioides* and a broadish one for *E. capitellata.* The difficulty, of course, begins with the intermediate forms. In many cases one cannot state whether the juvenile foliage is narrow or broad, and evidence furnished by other characters is, in some cases, difficult to interpret.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *eugenioides*, from two words, *Eugenia*, a genus of Myrtaceous plants, and a Greek word, *oidos*, like, indicating that the foliage reminded the describer of that of a *Eugenia*.

Vernacular Names.—It is usually known simply as "Stringybark." It is often known as "White Stringybark" in this State and also in Victoria (A. W. Howitt), but the timber is often reddish, and hence it bears the name of "Red Stringybark" also. In those cases *E. capitellata*, from the same district, usually bears the name of "White Stringybark."

Later on, specific instances will be given where the colour of the timber is not white; but on the whole this species appears to have paler timber than the generality of the Stringybarks, and so the name "White Stringybark" is as good as any.

The Stringybarks afford an excellent instance of the way in which timber-trees refuse to be marshalled into well-defined groups, as we would like them to do. It would save all persons concerned a great deal of trouble if they would show less evidence of variation.

Aboriginal Names.—I know no aboriginal name exclusively applied to this Stringybark.

Leaves.—Messrs. Baker and Smith (*Research on the Eucalypts*) report:—

Whence collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[\alpha]_D$	Saponification Number.	Solubility in Alcohol.	Constituents found.
Canterbury, N.S.W.	0·9122 to 0·9132	+ 3·74° to + 5·246°	6·89	1 vol. 80 %, but solubility increases on keeping.	Pinene, eucalyptol, sesquiterpene.

Bark.—The bark of the Stringybarks is proverbially excellent for roof-coverings for sheds, temporary houses, and the like. Often enough it covers houses (even the walls) for anything but temporary purposes, lasting more than a generation with care.

Timber.—When freshly cut usually dark brown, but drying to a pale warm brown, and even whiter. In some districts, however, the timber is distinctly red, even redder than the local *E. capitellata* timber.

The timber of this species is good for building purposes, being strong and durable and not particularly liable to warp. It is often considered, as at Mudgee, superior to "Red Stringybark" (*E. macrorrhyncha*).

Following is an extract from the Catalogue of the Queensland Forestry Museum, 1904.

> Red Stringybark (*Eucalyptus eugenioides*). Plentiful in southern coastal districts.
>
> A large tree, having a fibrous or stringy bark. Wood of a bright-red colour, short-grained, and not capable of bearing a very heavy strain. It is not so hard as other hardwoods, consequently fairly easy to work. Fencing-rails, flooring-boards, railway sleepers, street-blocking, and general building purposes.

With reference to the normal species, Mr. H. A. Lowe, of Mudgee, N.S.W., a well-informed correspondent, writes under date 10th February, 1898:—

> I have a post and rail fence of this timber which has been erected for fifty-two years, and the greater part of the fence is still in first-rate order.

A brickmaker pronounces Stringybark timber to be the best for burning bricks, as it does not give out too much heat.

Size.—A medium-sized and even large tree. Trees 60–80 feet are not uncommon.

Habitat.—It appears to be confined to eastern Victoria, New South Wales, from south to north, on the Dividing Range and its spurs, and east of them, and to southern Queensland.

VICTORIA.

The Victorian forms (often referred to in the writings of Victorian botanists as *E. piperita*), as a rule have fruits which are more or less pilular, *i.e.*, with sunk valves, thus approaching *E. piperita*, but the fruits appear to be never urceolate, as in that species.

Mr. (now Dr.) A. W. Howitt wrote to me, "The White Stringybark forms forests in Gippsland, for instance at Toongabbie, between Stratford and Bairnsdale, Bairnsdale and Buchan at the Lakes Entrance, in Croajingolong. It also occurs throughout the mountainous districts. It grows to a good size, is free from gum-veins, and is a useful timber. Its western limits are probably Traralgon and Woodside."

NEW SOUTH WALES.

Southern Localities.—Twofold Bay (J.H.M.); Wyndham and Bemboka (A. W. Howitt); Conjola, near Milton, with very long opercula (W. Heron); south of Nowra, from Jervis Bay (J.H.M.); Shoalhaven River, also Diggers' Creek (W. Forsyth and A. A. Hamilton), with filiform pedicels; Kangaloon (J. L. Bruce); Barber's Creek (H. J. Rumsey); Wingello (J. L. Boorman), medium trees, detected by short leaves and absence of glaucous tint. "Red Stringybark," in contradistinction to "White Stringybark" (*E. capitellata*), a reversal of this nomenclature being more common in other parts of New South Wales. A second collector (A. Murphy) confirms Mr. Boorman's report of the local nomenclature.

The Peaks, Burragorang (R. H. Cambage); Kangaroo Valley and Bowral to Bullio (J.H.M. and R. H. Cambage).

Hill Top, with specially marked white-dotted fruits and elongated opercula (J.H.M.).

Sydney district, common on the Wianamatta Shale, but also found on sandstone. Following are some Sydney district localities:—Homebush (J.H.M.); Concord Park (R. H. Cambage); Bankstown and Cabramatta (J. L. Boorman); Hurstville (R. H. Cambage), the valves sunk; La Perouse (W. W. Froggatt); Peat's-road (H. Deane); Newport (R. H. Cambage).

Western Localities.—To the foot of the Blue Mountains from Sydney, it is rather common. It is the commonest Stringybark on the Blue Mountains, occurring all over the range, and at all heights. Compared with the other rather common Blue Mountain Stringybark (*E. capitellata*), the timber is redder (!). The juvenile foliage is narrower, and not glaucous, like that of *E. capitellata.* The fruits of *E. eugenioides* on the Blue Mountains are not often exsert; instances to the contrary are Springwood (H. Deane); Mount Wilson (Jesse Gregson), with inner bark very yellow.

Jenolan Caves (W. F. Blakely).

At Capertee (J. L. Boorman) and Mudgee (District Forester C. Marriott) it is known as "White Stringybark."

E. eugenioides does not appear to go further west than Jenolan Caves and Mudgee.

"Bastard Stringybark" (Penrith: J. L. Boorman, January, 1900). I desire to invite attention to an interesting form of this species. The fruits are smaller than is usual, and nearly globular. They are on nearly filiform pedicels of about two lines; the common peduncle is twice that length, and more. The bark is harder and denser (less stringy) than those of the normal species—more "bark-bound"; a character also noted under *E. capitellata.* Perhaps hybridism is indicated in this case. The plant is indubitably *E. eugenioides,* though, from examination of the fruits alone, it might reasonably be supposed to be *E. hæmastoma,* var. *micrantha.*

Northern Localities.—Most of the northern specimens have the rims red and prominent, and the valves slightly exsert.

"Good timber, cut for sleepers. Yellow inner bark, between the rough and the inner bark; the fibrous portion very tough." Wyee (A. Murphy).

"Stringybark, free splitting; bark between sap and outside, yellow." St. Alban's district, Hawkesbury River (A. Murphy).

Wallsend (W. W. Froggatt, J. L. Boorman); Booral (A. Rudder).

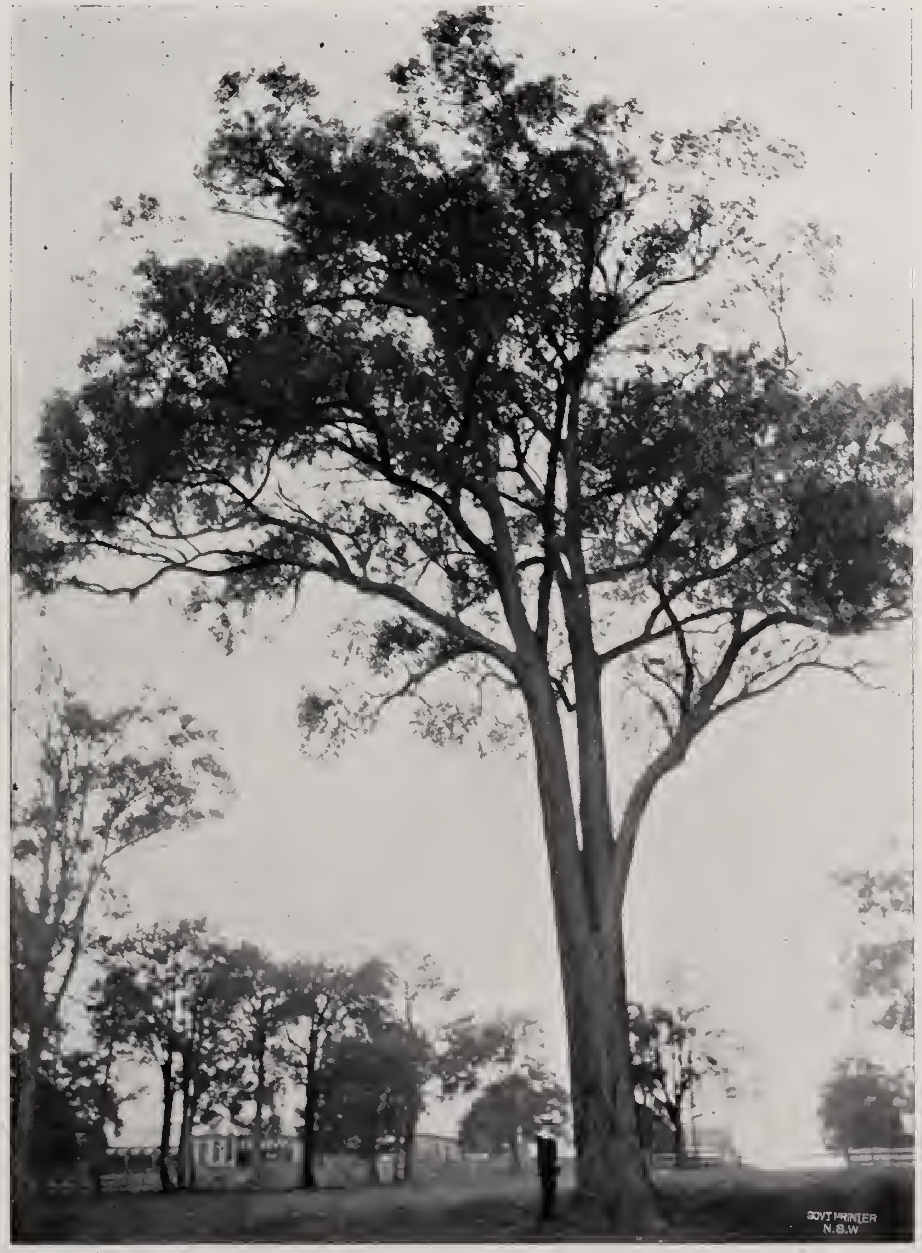
"Stringybark, height about 60 feet, diameter 18 inches, mould over shale." Near Underbank, Upper Williams River (A. Rudder, G. 10).

Pokolbin, No. 1,486 (R. H. Cambage).

Stewart's Brook. Rim of fruit red and pronounced (J.H.M.); Moggrani Mountain, Gloucester (J.H.M.); Upper Hastings River (J.H.M.); Macleay River (Forester W. Macdonald).

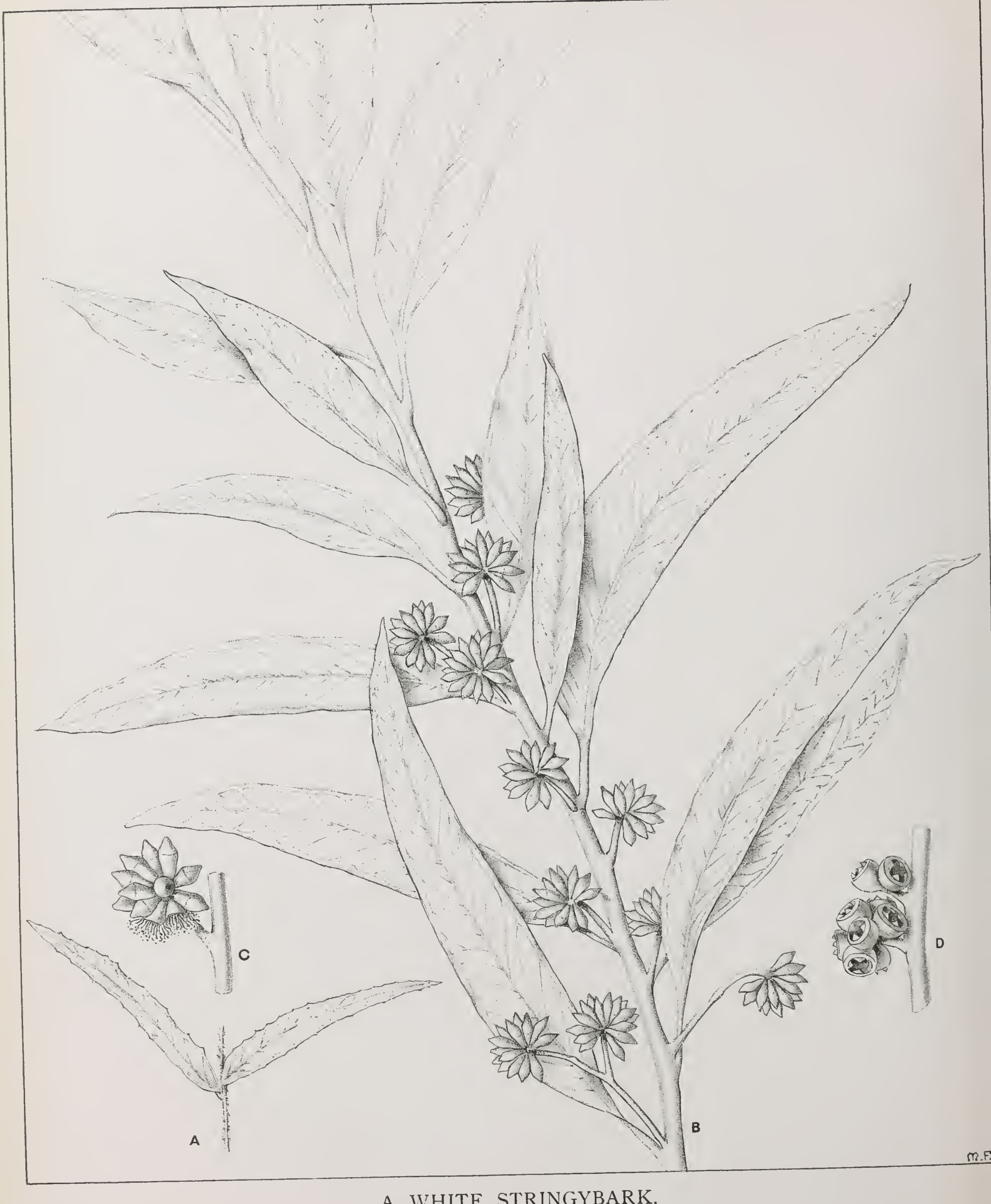
Murrurundi (J.H.M. and J. L. Boorman). Valves slightly exsert, rim broadish, hemispherical, slightly depressed, with short filiform pedicels, connecting with the "Bastard Stringybark" of Penrith.

Collaroy (J.H.M. and J. L. Boorman), showing white dots and a slight ribbing of the fruits.



R. H. Cambage, photo.

Eucalyptus eugenioides, SIEB. CONCORD, SYDNEY.



A WHITE STRINGYBARK.

(*Eucalyptus eugenioides*, SIEB.)

Near Cemetery, Tingha (R. H. Cambage); with fruits a little more sub-cylindrical and perhaps a little more domed than the type. Specimens from the same locality with nearly pilular fruits and very narrow juvenile foliage.

Near 11-mile post, Inverell to Tingha (R. H. Cambage). Form with even narrower leaves than the type.

Tingha to Guyra, 19 miles from the latter place (J.H.M. and J. L. Boorman). Juvenile leaves intermediate. Mature leaves broadish. Fruits (from same tree) flat-rimmed, domed; valves exsert and sunk; hemispherical and inclined to be sub-cylindrical.

Fruits in heads, slightly constricted, valves sunk. Tent Hill (E. C. Andrews).

Small fruits in heads, valves not exsert, Styx River (A. W. Howitt). I have other specimens from the same locality showing close affinity to *E. Muelleriana.*

Walcha (J. F. Campbell). Fruits rather exsert, and rim inclined to be domed. Shows affinity to *E. macrorrhyncha.* Ascending New England from Port Macquarie, this species was first observed about Yarrowitch. Thence it was not uncommon in the Tia district, where it is known as "Red Stringybark," and used for timbering the mines at Tia, and also locally for flooring-boards. This species shows a double operculum (J.H.M.).

Tenterfield to Sandy Flat (J.H.M.). Fruits very similar to those of Sydney, *e.g.*, Concord Park (believed to be typical), hemispherical, and somewhat exserted valves. Buds very compressed, almost like *capitellata.*

Drake to Richmond River (A. Hagman); Drake (E. C. Andrews), with rim of fruit rather sharp and valves exsert (transit to *E. Muelleriana*).

Foot of Mount Lindsay (W. Forsyth); Moonambah, Richmond River (W. Baeuerlen); valves slightly exsert.

QUEENSLAND.

Nerang, near Tweed Heads (F. M. Bailey). Small fruits with sharp rim, valves rather prominent.

"Stringybark." Yellow inner bark. Stanthorpe (J. L. Boorman).

"Yellow Stringybark," Landsborough, North Coast Railway (P. MacMahon). A pale-coloured timber, with stains of bright yellow running through it.)

EXPLANATION OF PLATE 110.

- A. Juvenile leaves, drawn from Sieber's type. Note their narrowness, their toothed margins and stellate hairs.
- B. Twig with buds.
- C. Buds and flowers.
- D. Fruits.

ILLUSTRATION. Photograph of *Eucalyptus eugenioides*, from Concord, near Sydney (R. H. Cambage, photo.) This is the typical form of the species.

No. 107.

Acacia Bakeri, Maiden.

Baker's Wattle.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. Bakeri,* Maiden, in *Proc. Linn. Soc. N.S.W.*, xx, 337 (1895).

Attains the dimensions of a large forest tree, measuring up to 160* feet in height, and from 2 to 4½ feet in diameter; stem sometimes buttressed. It is, as far as at present known, exclusively confined to brushes, as distinct from open forest.

Branchlets at first terete, but at length flattened, glabrous.

Phyllodia sessile, broadly lanceolate, narrowed at each end, obtuse, mostly 3 to 4 inches long and 1 inch broad, but occasionally 6 inches long and 3 inches broad when they are acuminate and broad at the base; 3-nerved, with sometimes a short one terminating in a gland a little removed from the base, penniveined between the nerves, margins thickened and undulate, thinly coriaceous.

Peduncles slender, 6 lines long, mostly in clusters of 3 to 10, forming numerous axillary racemes mostly exceeding the phyllodes, bearing a small loose head of few, pale-coloured flowers, rarely as many as 20; mostly 4-merous.

Calyx short, pubescent or softly villous, eventually separating into spathulate lobes.

Petals pubescent, softly villous.

Pod long, straight, flat, usually 8 inches long and 6 lines broad, thin, contracted somewhat between the seeds; shining.

Seeds flat, ovate, longitudinal; funicle short and filiform, neither folded nor enlarged.

Its closest affinity is with *A. binervata,* which it resembles in the penniveined reticulations of the phyllodes and in the flowering racemes, but differs from it in individual flowers, pod, and seed.

The two species may be thus compared:—

A. Bakeri.

Size.—A large brush tree.

Branchlets flattened, angular.

Phyllodes obtuse, broadly lanceolate, narrowed at both ends, 2 to 6 inches long, ½ to 3 inches broad; thinly coriaceous, 2- or 3-nerved, pinnately veined, margins thickened between the veins.

Inflorescence.—Loose, elongated panicles or racemes, peduncles in clusters.

Flowers few, never *more than* 20; *petals villous, sepals villous,* spathulate, 4-*merous.*

Pod nearly six lines broad, thin, straight.

Seed ovate, longitudinal, funicle short and filiform, neither folded nor enlarged.

---

* A road party in 1894 cut down one of these trees on Mullumbimby Creek, and it was found by measurement to be 140 feet high and 3 feet 8 inches in diameter. The collector (Mr. W. Baeuerlen) adds, "On Tengoggin Mountain there are *plenty* of trees 20 or 30 feet higher."

A. binervata.

Size.—A tree.

Branchlets terete.

Phyllodes as in *A. Bakeri*, but 3 nerves predominate.

Inflorescence.—Axillary racemes.

Flowers about 20; petals smooth, sepals glabrous.

Pod ½-inch broad.

Seed obovate, longitudinal, funicle folded and dilated under seed.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *Bakeri*, in honor of Richard Thomas Baker, now Curator of the Technological Museum.

Vernacular Name.—I propose the name "Baker's Wattle" for this fine species. Most Wattles are esteemed for bakers' ovens, so please remember that it is "Baker's Wattle" and not "Bakers' Wattle," the latter being by no means distinctive.

Fruits.—The pods are very difficult to procure, owing to their ripening and falling in what is usually the wettest part of the year. In many instances pods were caught while falling from the trees, when every seed was found to have begun to germinate.

They are very variable both in length and breadth, some being very broad and a little constricted between the seeds, while others from the same tree are very narrow and much constricted; the valves are all very thin.

Bark.—The bark is quite distinct from *A. binervata*, its nearest ally. It is inclined to be smooth, and exudes very little gum, as far as seen, and is reputed to be poor in tannin.

Following is an extract from a letter from Mr. Baker to me:—

> The bark of this species is hard, compact, and externally somewhat smooth. A specimen tested was obtained from a large tree, and the average thickness of the bark was 7 mm. It powders fairly well, although the outer portion is a little fibrous. The tannins were somewhat highly coloured, but like wattle barks generally, they act quickly on the hide. The percentage of non-tannins is somewhat high. The bark cannot be said to be of high quality, but could be used in the absence of better material.
>
> The results on air-dried bark were as follows:—

Total extract	25·14 per cent.
Moisture	12·63 „
Tannins	19·24 „
Non-tannins	5·90 „

Timber.—The timber is pale-coloured right to the heart, as far as seen.

The flowers, bark, seeds, and timber all emit an alliaceous odour when fresh, reminding one of *Dysoxylon rufum*.

Mr. Baker writes to me as follows:—

> With reference to your letter asking for a description of the timber of *Acacia Bakeri*, I have to inform you that in facies the wood is not at all similar to the general run of Wattles, there being quite an absence of a dark duramen. In fact it more resembles "Hornbeam" or our own "Teak." It is a pale yellowish coloured, hard, tough, and very heavy timber, with a slightly interlocked texture. It has rather an abnormal percentage of sapwood, which makes it a happy hunting-ground for the borers.

Tests.

Transverse 1.—10 in. x 1 in. x 1 in. broke at 1,300 lb.
Do. 2.— do do 1,500 lb.
Compression 1.—6 in. x 1 in. x 1 in. broke at 9,900 lb.
Do. 2.— do do 9,650 lb.

Exudations.—Our specimens of this gum, collected at Mullumbimby, N.S.W., are principally in tears, very bright and transparent, dark amber coloured, very brittle, and bright in fracture. It is entirely and readily soluble in cold water, and is in this respect one of the best of the coast Acacia gums of this Colony; it is very adhesive, and its comparative viscosity is high. Unfortunately our samples darken much in aqueous solution. The solution is slightly acid to litmus paper. Ferric chloride gives a cream-coloured solid mass exactly resembling in bulk and colour that from *A. Maideni*, and it behaves in the same way as that gum with a saturated solution of borax, mercuric chloride, and basic acetate of lead. Both these gums belong to the arabin group, and if obtainable in quantity would be of some commercial value. As far as our samples show at present, the gum of *A. Maideni* has a better colour than that of *A. Bakeri*, but it is inferior to it as regards its adhesive properties. When warmed with dilute soda solution, the aqueous solution of the gum darkens considerably. The ash of this gum is remarkable in that it contains a large proportion of manganese. It contains 15·2 per cent. moisture and 3·6 per cent. ash. (Maiden and Smith.*)

Size.—This is probably one of the largest of all the Acacias. It has been found in the mountains measuring over 160 feet, with a trunk from 50–60 feet clear of limbs, and a diameter from 2 to 4 feet, and on the banks of creeks 140 feet high, and in some instances "so high that the leaves could not be seen" (distinguished).

Habitat.—Tengoggin Mount (1,000 feet), near Mullumbimby, Brunswick River, N.S.W.; also Mullumbimby Creek, a tributary of the Brunswick (W. Bäuerlen).

EXPLANATION OF PLATE 111.

A. Flowering branch.
B. Phyllode.
C. Flower-head.
D. Individual bud.
E. Flower.
F. Flower, opened out, showing—
    (*a*) Calyx.
    (*b*) Corolla.
    (*c*) Stamens.
    (*d*) Pistil.
G. Bract (found at the base of each flower).
H. Stamen.
K. Pod.
L. Seed, remarkably flat, no aril.

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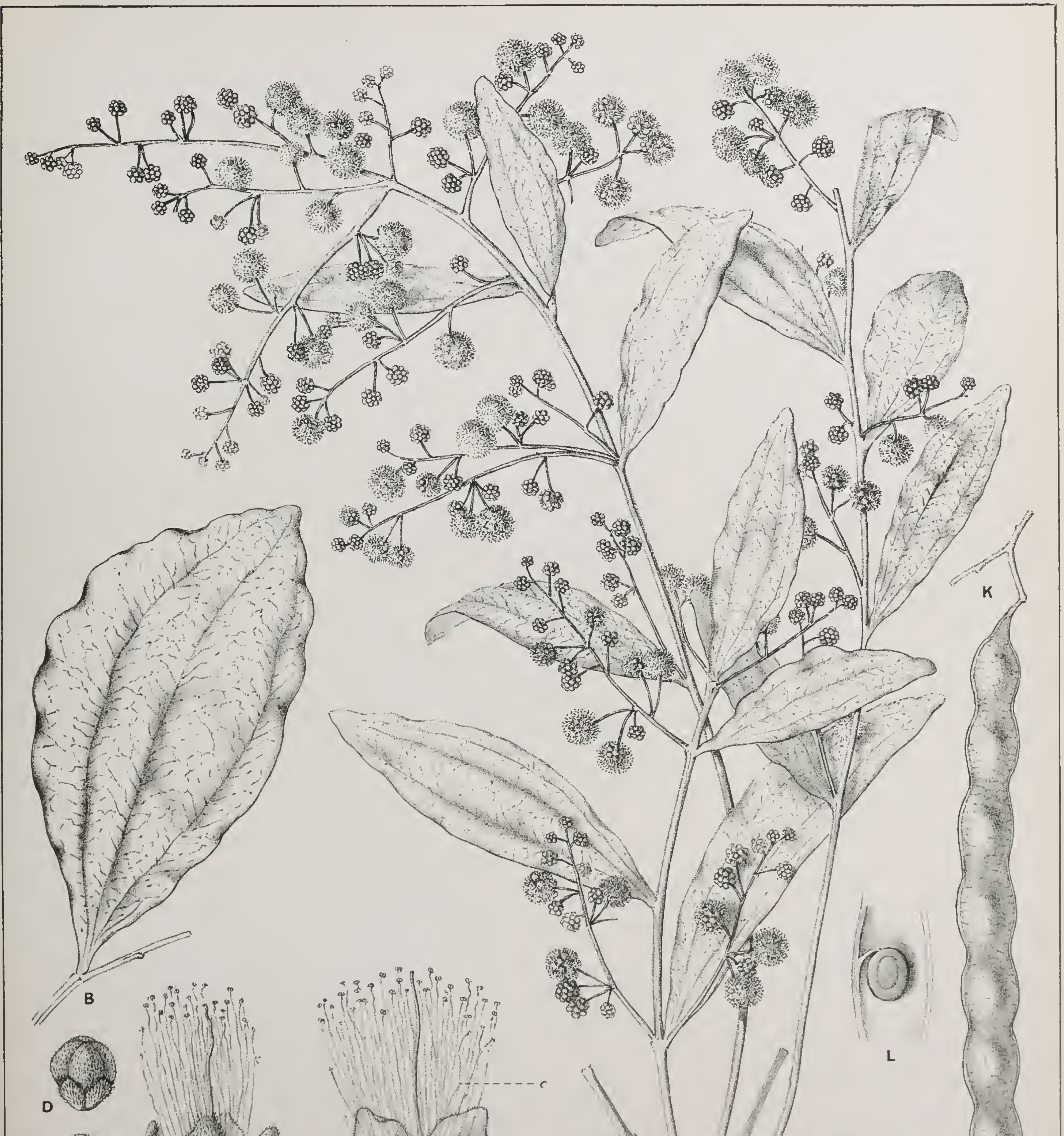
* "Contributions to a Knowledge of Australian Vegetable Exudations, Part I," in *Journ. Roy. Soc. N.S.W.*, xxix (1895), p. 399.



BAKER'S WATTLE.

(*Acacia Bakeri*, MAIDEN.)

No. 108.

Cryptocarya fœtida, R. T. Baker.

The Stinking Cryptocarya.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya.* (See Part III, p. 72.)

Botanical description.—Species, *C. fœtida,* R. T. Baker, *Proc. Linn. Soc. N.S.W.*, xxx, 517 (1905).

A small tree from 30 to 50 feet high, and 9 inches in diameter, so far as at present known; glabrous, except the inflorescence, which is minutely rusty or silvery.

Leaves.—Glabrous on both sides, ovate to oblong, acuminate or obtuse, mostly 4 to 5 inches, rarely 6 inches long, from 1½ to 2½ inches broad, rarely 3 inches, paler on the underside but *not glaucous,* not shining, although perhaps a little so on the under surface, rigid, thick, almost coriaceous, margins slightly recurved, reticulations well marked and coarsely so on the under surface. The leaves have irregularly scattered over the upper surface black spots or markings, probably caused by sudden changes of temperature, as they do not appear to be caused by any organism.

Panicled cymes.—Axillary or terminal, solitary, but occasionally in twos or threes; flowers numerous, hoary pubescent, smaller than those of *C. patentinervis,* F.v.M., but larger than those of *C. glaucescens,* R.Br.

Perianth segments about 1 line long, the tube turbinate half the length of the tube.

Glands.—Shortly stipitate, much shorter than the inner or outer stamens, and not attached to either the inner or outer series of these organs.

Staminodia.—Three, about half the length of the stamens.

Fruiting perianth.—Globular, 4 to 5 lines in diameter, mostly with a "bloom."

In shape and reticulation of leaf *C. fœtida* approaches more nearly *C. Mackinoniana,* F.v.M., and in botanical sequence it should perhaps come between that species and *C. obovata,* R.Br.

Botanical Name.—*Cryptocarya,* already explained (see Part III, p. 73); *fœtida,* Latin, ill-smelling, in allusion to the flowers. See below.

Vernacular Names.—I know of none, and so suggest the provisional name of "Stinking Cryptocarya" for it.

Flowers.—'One of its economics is worthy the attention of the apiarist, for Mr. Bäuerlen writes concerning the tree: "The flowers have a very offensive odour, but are nevertheless very much visited by bees, wasps, and other insects."'—(R. T. Baker).

Timber.—Not seen to any size, but most of the Cryptocaryas are famed for their hard, durable wood, and this one probably is no exception.

This and the above notes and description have been extracted from Mr. Baker's original description, already quoted.

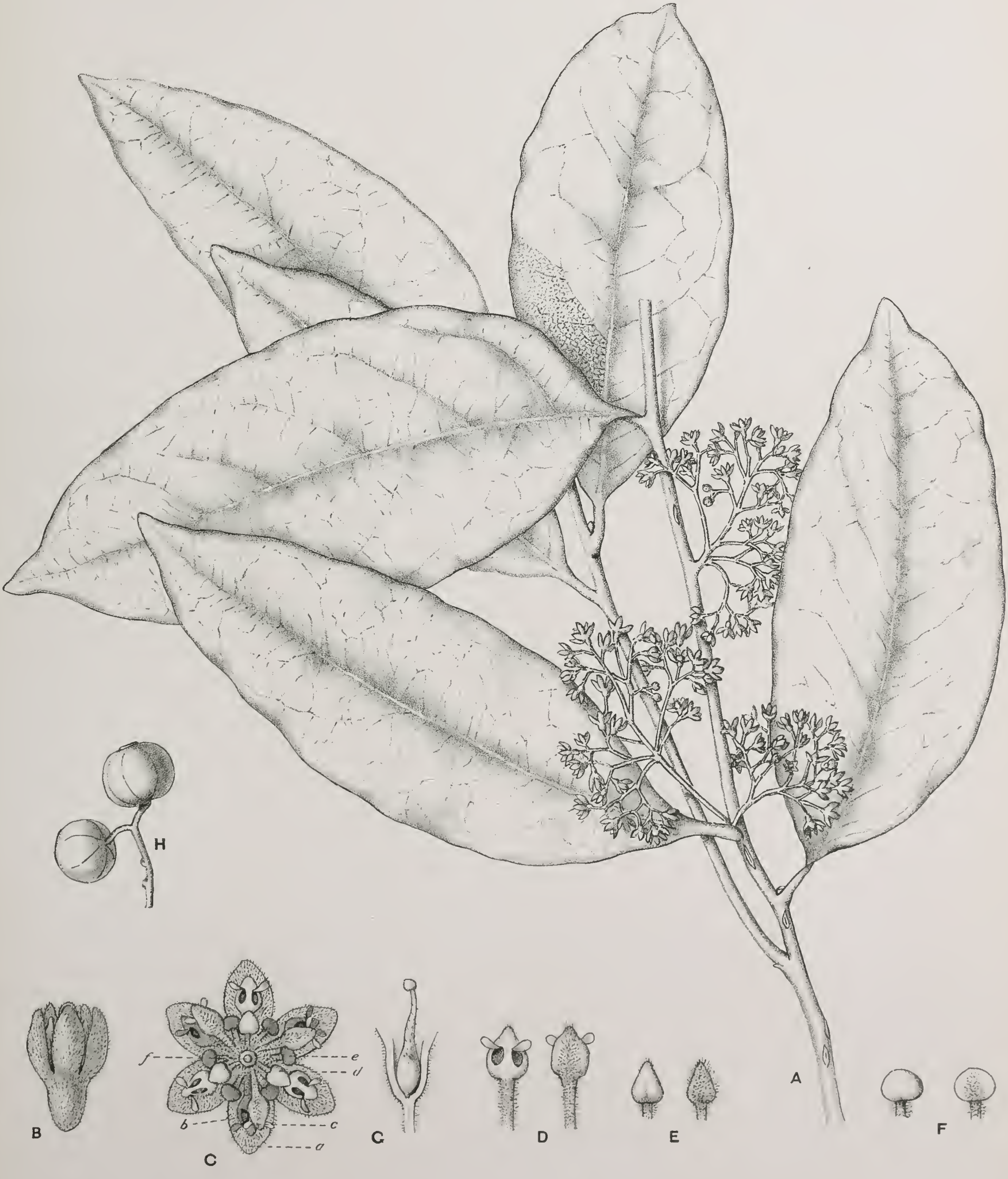
This is another of our brush trees of which but little is known, and it is to be hoped that the description given and the illustration will lead to further particulars being ascertained concerning it.

Size.—A small tree from 30 to 50 feet high and 9 inches in diameter, so far as is at present known.

Habitat.—Moreton Bay (Allan Cunningham); Ballina (W. Bäuerlen).

EXPLANATION OF PLATE 112.

A. Flowering branch.
B. Young flower.
C. Flower, opened out, showing—
    (*a*) Calyx (perianth segment).
    (*b*) Stamens, inner row.
    (*c*) ,, outer row.
    (*d*) Staminodia, inner row.
    (*e*) ,, outer row.
D. Anther, front and back view.
E. Staminode, inner row.
F. ,, outer row.
G. Fruits.



THE STINKING CRYPTOCARYA.

(*Cryptocarya fœtida*, R. T. BAKER.)

A Critical Revision of the genus Eucalyptus.*

This work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets).

Eucalyptus acmenioides, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *microcorys*, F.v.M. (IX).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *Planchoniana*, F.v.M. (IX).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX).
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

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* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV wil be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimen from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1907.

C

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39.—THE FOREST RED GUM (*Eucalyptus tereticornis*, Sm.).
No. 40.—THE BLACK APPLE (*Sideroxylon australe*, Benth. et Hook., f.).
No. 41.—THE SMOOTH-BARKED APPLE (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—THE BLOODWOOD (*Eucalyptus corymbosa*, Sm.).
THE CYPRESS PINES OF NEW SOUTH WALES (*Genus Callitris*) :—
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No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—THE MUGGA; A RED IRONBARK (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—THE NATIVE ELM (*Aphananthe philippinensis*, Planch.).
No. 54.—THE BELAH (*Casuarina lepidophloia*, F.v.M.).
No. 55.—THE WESTERN ROSEWOOD (*Heterodendron oleæfolium*, Desf.).

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—THE GRUIE OR COLANE (*Owenia acidula*, F.v.M.).
No. 57.—THE BLACK SALLY (*Eucalyptus stellulata*, Sieb.).
No. 58.—THE SWAMP OAK (*Casuarina glauca*, Sieb.).
No. 59.—A DECIDUOUS FIG (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—THE BLACKWOOD (*Acacia melanoxylon*, R.Br.).
No. 61.—A WHITE OR CABBAGE GUM (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—THE RIVER OAK (*Casuarina Cunninghamiana*, Miq.).
No. 63.—THE WESTERN WHITEWOOD (*Atalaya hemiglauca*, F.v.M.).

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No. 67.—THE IVORY WOOD (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—THE DROOPING SHE-OAK (*Casuarina stricta*, Ait.).
No. 69.—THE RIVER WHITE GUM (*Eucalyptus numerosa*, Maiden).
No. 70.—THE NATIVE TEAK (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—THE CUDGERIE (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—THE GIANT GUM TREE (*Eucalyptus regnans*, F.v.M.).
No. 73.—THE BLACK SHE-OAK (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—THE YELLOW-WOOD (*Flindersia Oxleyana*, F.v.M.).
No. 75.—THE BROAD-LEAVED PEPPERMINT (*Eucalyptus dives*, Schauer.).
No. 76.—THE BULL OAK (*Casuarina Luehmanni*, R. T. Baker).
(*Two Plates.*)

PART XX (ISSUED JULY, 1906).

Recapitulatory (Sixteen Plates).

Volume III.

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(*Two Plates.*)
No. 78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
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Part XXII (issued February, 1907).

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(*Two Plates.*)
No. 81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
No. 82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

Part XXIII (issued March, 1907).

No. 83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
No. 84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
No. 85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.).
(*Two Plates.*)

Part XXIV (issued May, 1907).

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(*Two Plates.*)

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THE FOREST FLORA
OF
New South Wales.

J. H. MAIDEN.

VOL. III. PART 10.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES

PART XXX OF THE COMPLETE WORK

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the
Botanic Gardens, Sydney.

PART XXX.

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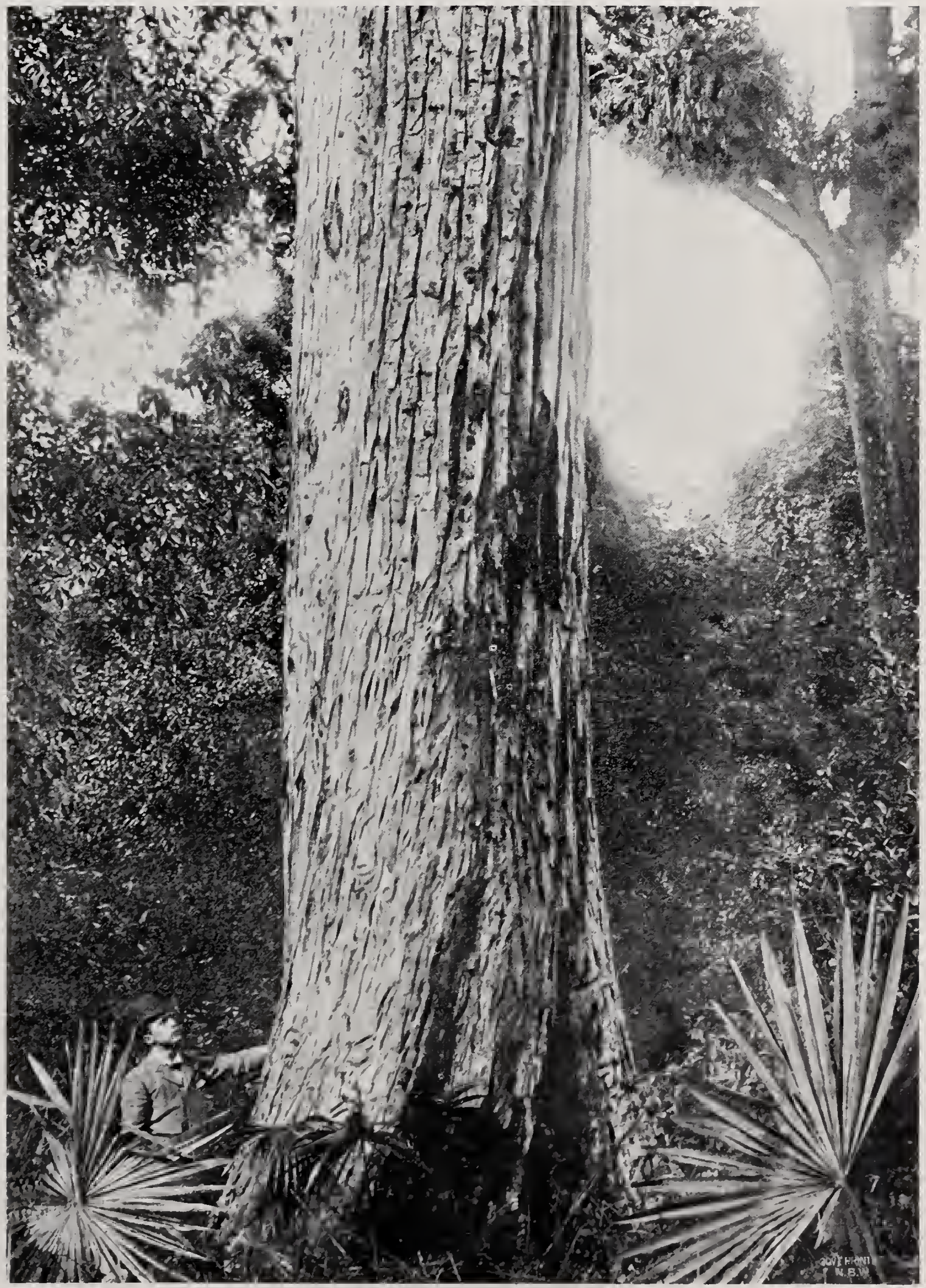
*2601—A

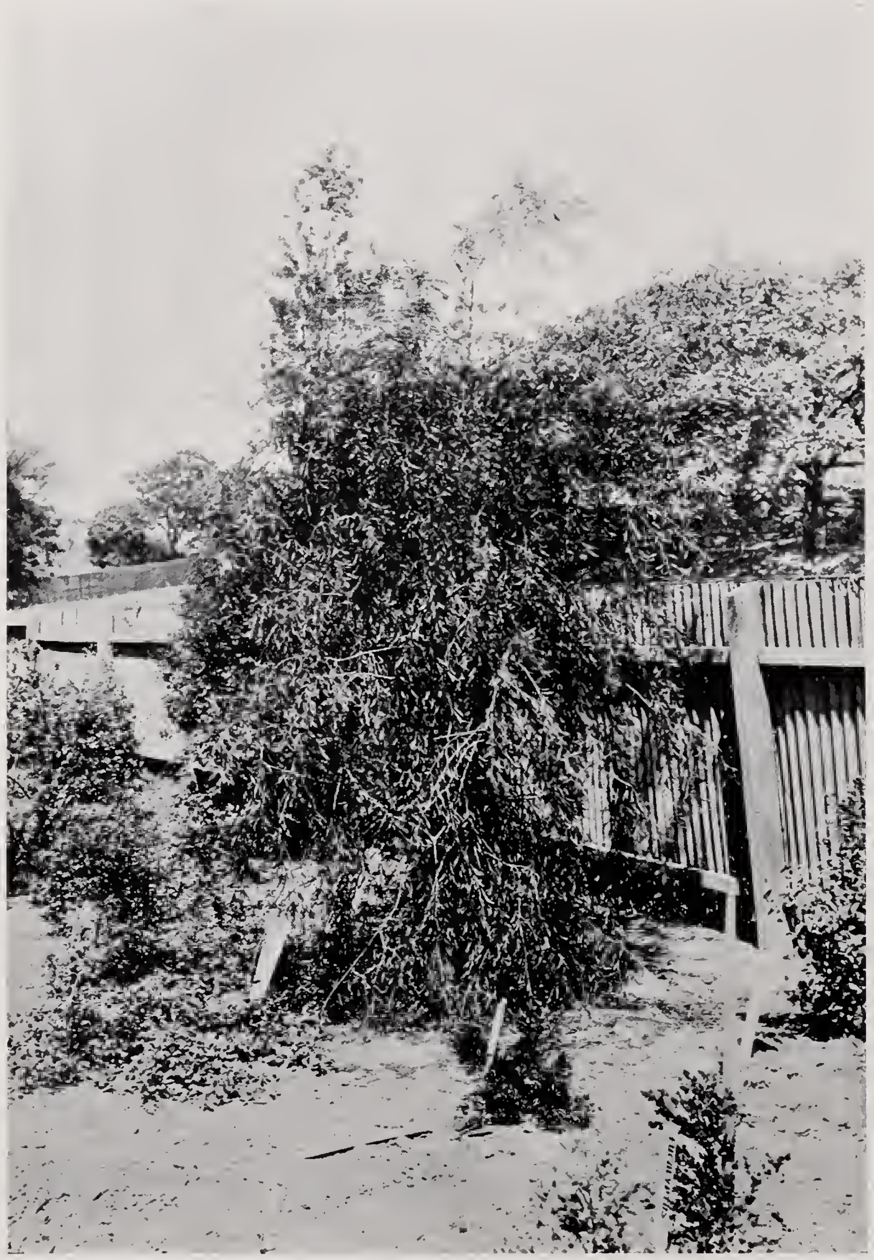
IF my readers will turn to the Prefatory Note to Part XX of this work, they will observe that I promised to give in Part XXX (which completes Volume iii) such supplementary information as will bring the work up to date. I herewith carry out my promise.

In addition, the Yellow Stringybark and the Nealie are figured and described.



Kerry, photo.

TURPENTINE TREE *(Syncarpia laurifolia)*, BULLI PASS.



Pittosporum phillyræoides (YOUNG TREE IN BOTANIC GARDENS, SYDNEY).

No. 3. Part I.

Syncarpia laurifolia, Ten.

THE TURPENTINE TREE.

(Family MYRTACEÆ.)

Synonyms.—See vol. i, p. 16.

Following are the original descriptions of two of the synonyms quoted:—

Metrosideros procera, Salisb. *Prod. Stirp. in hort. Chapel Allerton* (1796), p. 351.
M. foliis alternis; laminis ovato-lanceolatis, subtus viridibus, coriaceis; nervis divaricatis.
Sponte nascentem juxta Port Jackson, legit Dav. Burton.

Metrosideros propinqua, Salisb. *Prod. Stirp. in hort. Chapel Allerton* (1796), p. 351.
M. foliis alternis; laminis ovato-lanceolatis, subtus glaucis, coriaceis; nervis divaricatis.
Sponte nascentem juxta Port Jackson, legit Dav. Burton.
Admodum similis praecedenti [M. procera], sed fructu, ni fallor, distincta species.

ILLUSTRATION.

Photograph of Turpentine tree (*Syncarpia laurifolia*), Bulli Pass, N.S.W.—(Kerry & Co.)

No. 4. Part I.

Pittosporum phillyræoides, DC.

THE NARROW-LEAVED PITTOSPORUM.

(Family PITTOSPORACEÆ.)

Aboriginal Names.—See vol. i, p. 30.

"Macla" of the Paroo River blacks (R. J. Dalton). "Derrine" of the Dubbo blacks (C. Marriott).

Medicinal Properties.—"Used by the blacks in the old days for internal pains and sprains. The seeds and pulp were taken from the fruit and soaked in water."—(R. J. Dalton, Tinapagee, Wanaaring.)

"An infusion of wood or leaves taken inwardly will relieve pain and cramps."—(C. Marriott, District Forester, Dubbo.)

ILLUSTRATION.

A cultivated specimen in the Botanic Gardens.—(Government Printer.) As a young tree it is a blaze of yellow flowers from top to bottom.

No. 8. Part II.

Alstonia constricta, F.v.M.

A "BITTER BARK."

(Family Apocynaceæ.)

Leaves.—During the last drought, Mr. F. B. Guthrie analysed the leaves of this tree, with the view of ascertaining its fodder-value. Following is his result :—

	Water.	Ash.	Fibre.	Ether Extract (Oil, &c).	Albuminoids.	Carbo-hydrates.	Nutrient value.	Albuminoid ratio.	Tannin (oak bark).
Quinine ...	51·72	3·65	9·22	1·89	9·00	24·52	37¾	1 : 3¼	1·7

(*Agric. Gazette, N.S.W.*, Oct., 1899.)

ILLUSTRATIONS.

"Quinine tree," Weelamurra, beyond Bourke.—(Kerry & Co.)

"Quinine." A small plant, Coonamble.—(C. J. McMaster.) This shows its characteristic habit in its juvenile stage.

No. 13. Part IV.

Podocarpus elata, R.Br.

THE BROWN OR SHE-PINE.

(Family Coniferæ.)

Timber.—See vol. i, p. 87.

Brown Pine, said to be an excellent timber for flooring boards and house-building.—(District Forester Wilshire, Grafton.)

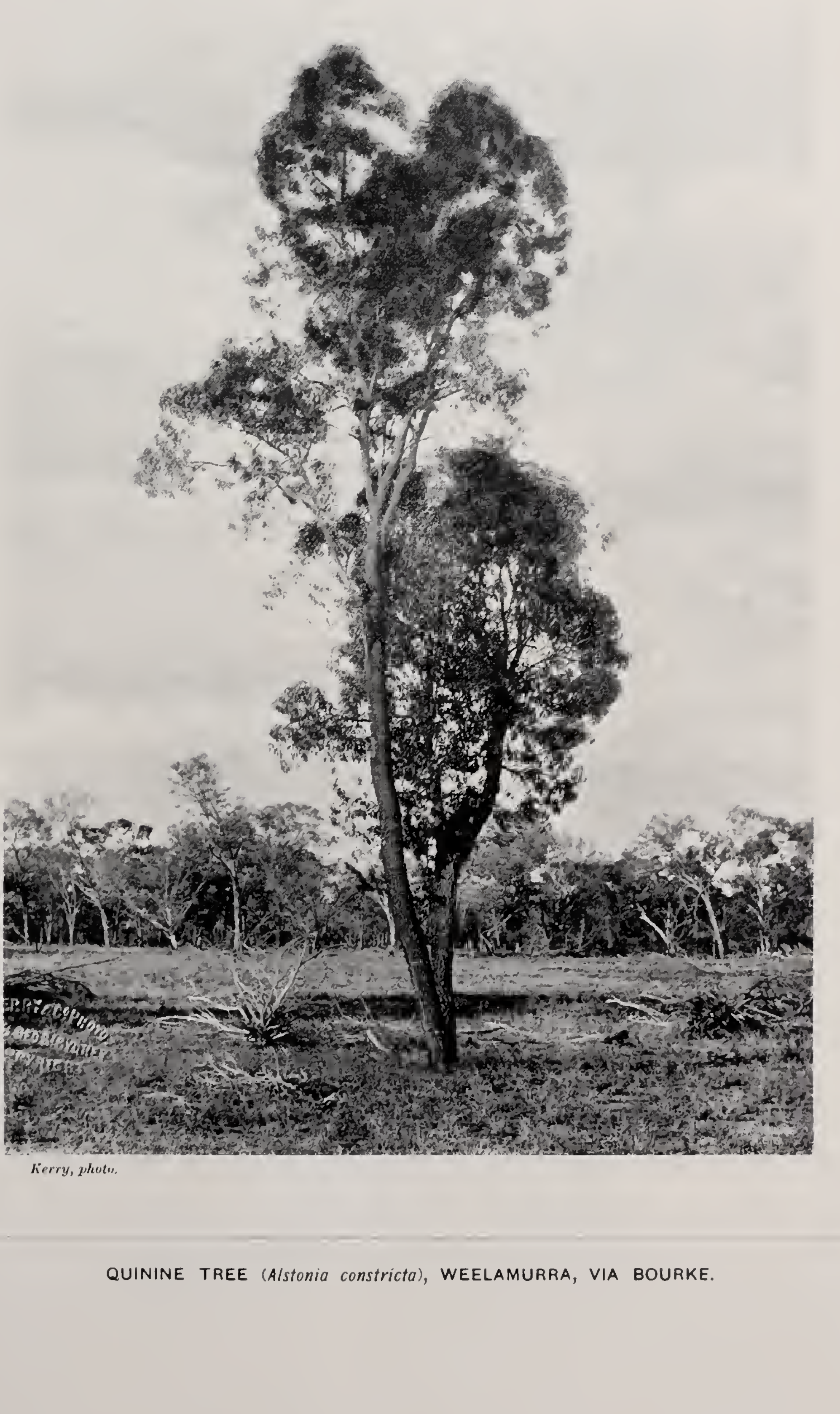
A tall tree of medium size, with irregularly-shaped trunk ; very thin, dark-coloured, slightly furrowed bark, and narrow dark-green leaves. Wood light-brown colour, light, soft, and easy to work.

Used for piles and for sheathing vessels ; resists to a great extent attacks of the teredo. Is best suited for purposes under water.—(*Cat. Forestry Mus., Queensland*, 1904.)

Habitat.—See vol. i, p. 89; vol. ii, p. 193.

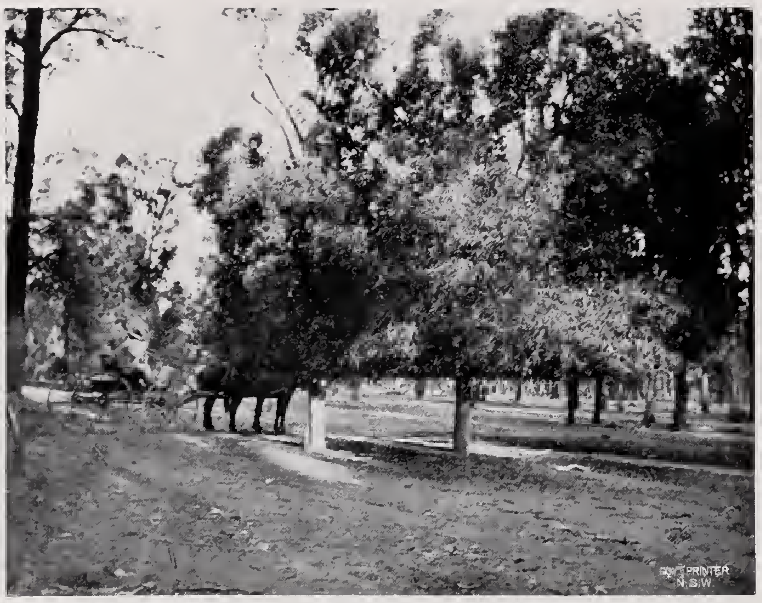
Trees in the islands of the Clarence River, small, with clean barrels about 30–40 feet.—(District Forester Wilshire.)

Not plentiful ; occasional trees are found on Beech Mountain, and in some of the coastal scrubs in Southern Queensland.—(*Cat. Forestry Mus., Queensland*, 1904.)



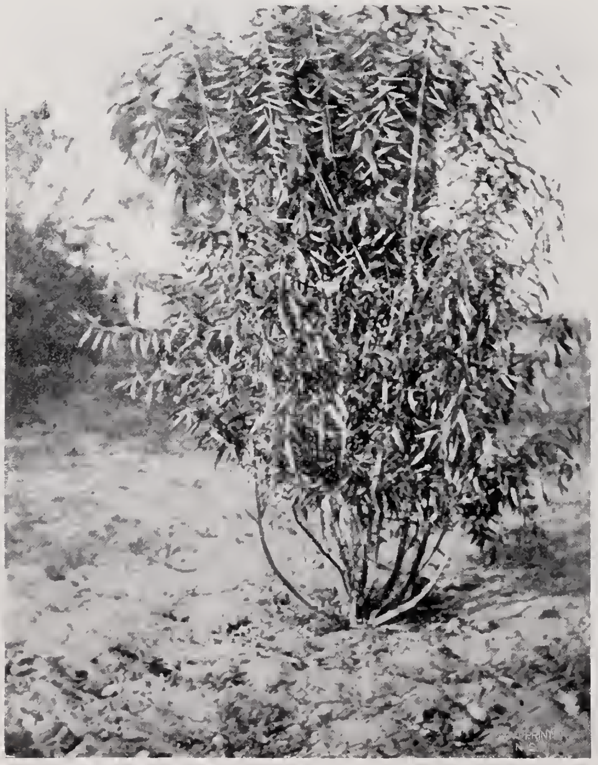
Kerry, photo.

QUININE TREE (*Alstonia constricta*), WEELAMURRA, VIA BOURKE.



C. J. McMaster, photo.

QUANDONG (*Fusanus acuminatus*), NEAR COONAMBLE.



C. J. McMaster, photo.

"QUININE" (*Alstonia constricta*), COONAMBLE.

No. 14. Part IV.

Melaleuca leucadendron, Linn.

THE BROAD-LEAVED TEA-TREE.

(Family MYRTACEÆ).

Synonym.—See vol. i, p. 92.

Following is the original description of *Metrosideros coriacea* :—

Metrosideros coriacea, Salisb. *Prod. Stirp. in hort. Chapel Allerton* (1796), p. 352.

M. foliis alternis : laminis ovato-lanceolatis, utrinque glabris, valde coriaceis.

Sponte nascentem juxta Port Jackson, legit Dav. Burton.

Caulis in hac et pluribus ejusdem Regionis, etiam Banksiis et Proteis, ad exortum ramorum singulariter intumescit.

Timber.—See vol. i, p. 96; vol. ii, p. 194.

"Tea-tree (*Melaleuca leucadendron*), a common timber on eastern coast north of Sydney; it is hard, fairly heavy, close-grained, and not unlike Mararie in texture; it makes a good club that drives well, and is of the right weight and toughness."—(R. T. Baker in *Golf Illustrated*, 28th July, 1905.)

No. 15. Part IV.

Fusanus acuminatus, R.Br.

THE QUANDONG.

(Family SANTALACEÆ.)

Aboriginal Names.—See vol. i, p. 98.

According to Mr. J. G. Saxton the following are Victorian aboriginal names for this tree:—

Lake "Albacuyta" from the native name "Ngelbakutya"—the sour Quandong.

"Bitehigal"—Native Quandong trees.

[N.B.—In the *Pflanzenfamilien*, *Fusanus* and *Santalum* are kept distinct. Bentham keeps them so; Mueller unites them.]

Santalum.—See vol. i, p. 103; also vol. ii, p. 195.

Santalum lanceolatum.—"The leaves were used by the blacks for boils, sores, and gonorrhœa."—(R. J. Dalton, Tinapagee, Wanaaring.)

ILLUSTRATION.

"Quandong." Nebea, near Coonamble. A very fine specimen, about 25 feet high. In its natural condition the foliage trails on the ground, but being edible, stock have eaten off all leaf-growth within reach. Mr. Whitney, the owner of Nebea, takes great care of this tree.—(C. J. McMaster.)

No. 16. Part V.

Tristania conferta, R.Br.

THE BRUSH BOX.

(Family MYRTACEÆ.)

Size.—See vol. i, p. 111.

A tree was measured with a girth of 29 feet at 3 feet from the ground.

It was growing 1,800 to 2,000 feet above sea level on Bulga Mountain, head of Ellenborough River.—(George S. Hill, Bungay, Wingham, 27th November, 1906.)

No. 32. Part IX.

Ventilago viminalis, Hook.

THE SUPPLE JACK.

(Family RHAMNACEÆ.)

Vernacular Name, etc.—See vol. i, p. 191.

"Supple Jack"; called also "Vine-tree"; other name variously spelt "Cunnianna" or "Cunnyunny," one of our most valuable fodder trees. All stock are very fond of it. It stands plenty of lopping. When young the stems twist round each other like a vine; hence the name, "Vine-tree." It appears to start as a vine at the base of some other shrub, which it eventually displaces. It then grows into an upright tree 20 or 30 feet high.—(A. W. Mullen, L.S., of Bourke, through the Chairman of the Western Lands Board.)

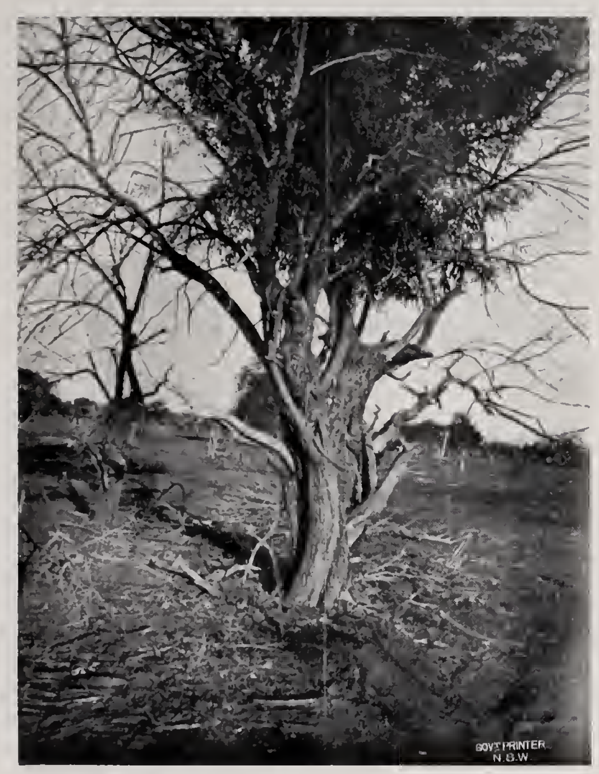
"Supple Jack or Australian Willow." Good firewood, bullock-yokes, and shafts, but hard to get straight; also good fodder for stock. Resists white ants.—(R. J. Dalton, Wanaaring.)

ILLUSTRATIONS.

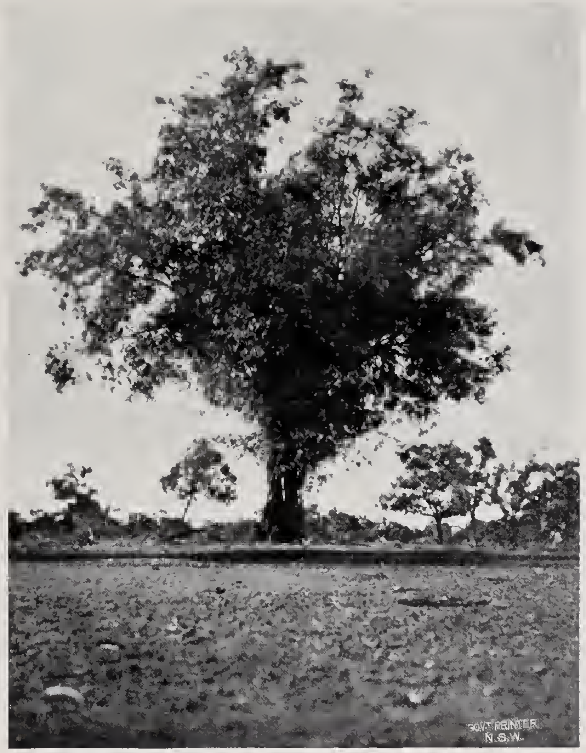
Photographs of Supple Jack from Fort Bourke, near Bourke.—(C. J. McMaster.)

Mr. C. J. McMaster furnishes the following information :—

Plate (1) indicates the habit of growth in an intermediate stage. It will be seen that the plant made use of the tree, immediately behind it, to climb upon, and, having grown sufficiently stable to no longer require its assistance, it took possession of the situation, and probably destroyed its host. The two are so close together that they look like one on the plate, but a careful examination will reveal the difference. Taken near Brewarrina. Plate (2) shows a fine specimen of Supple Jack. Indications of its early habit of growth are distinguishable in the younger stems—on the left—which have not yet outgrown the spiral climbing peculiarity.

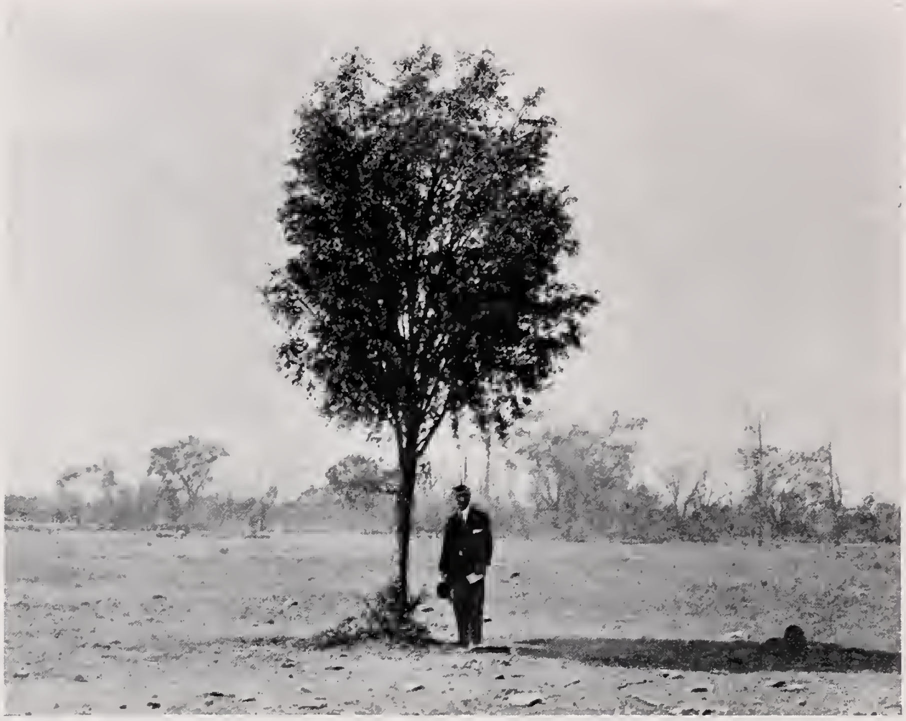


C. J. McMaster, photo. (1.)



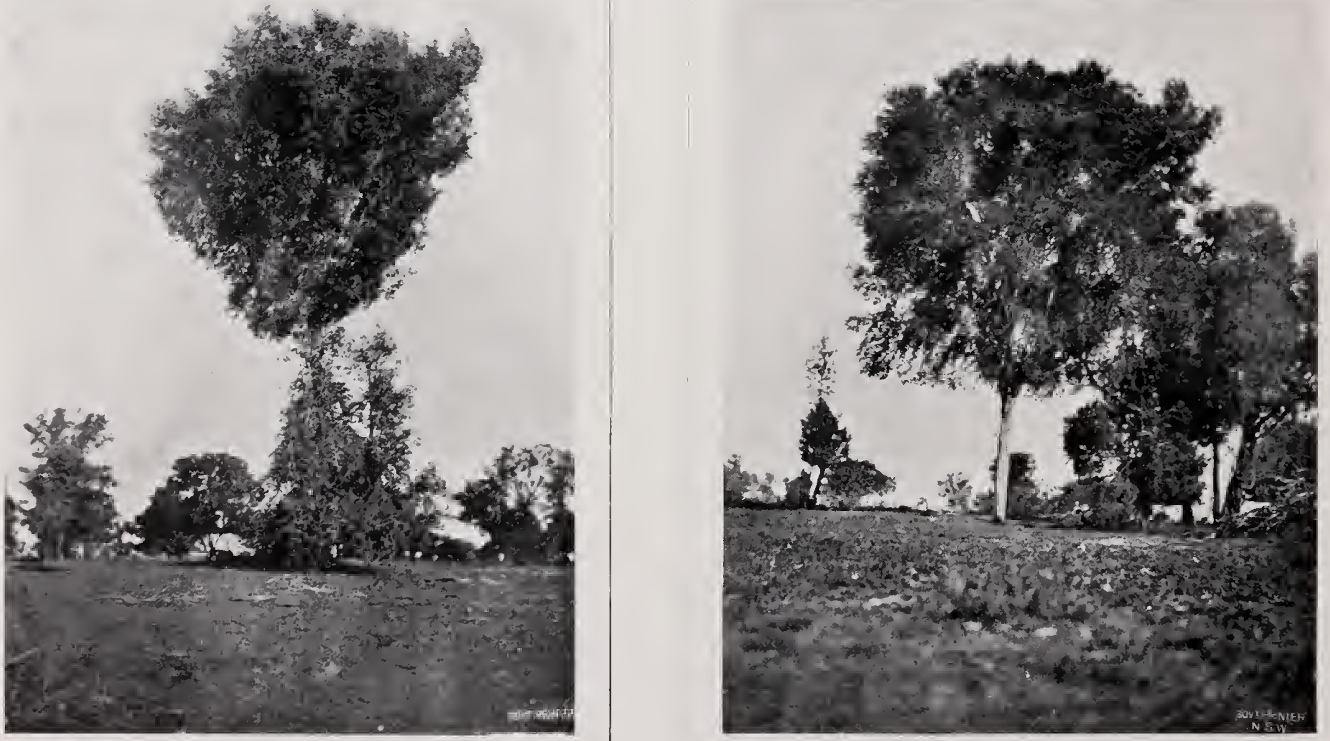
C. J. McMaster, photo. (2.)

SUPPLE JACK OR CUNNIANNA (*Ventilago viminalis*), FORT BOURKE,



R. W. Peacock, photo.

LEOPARD TREE (*Flindersia maculosa*) COOLABAH.



C. J. McMaster, photo. (1.)

C. J. McMaster, photo. (2.)

LEOPARD WOOD OR TREE FORT BOURKE.

No. 37. Part X.

Flindersia maculosa, F.v.M.

THE LEOPARD WOOD.

(Family MELIACEÆ.)

Aboriginal Name.—See vol. i, p. 210.

"Bocalla."—(A. W. Mullen, Bourke.)

Leaves.—See vol. i, p. 212.

Edible for stock. Stock eat the small sticks of Leopard Wood, and if its use is prolonged, pith balls are developed in the sheep's stomach.—(A. W. Mullen, Bourke, per favour of C. J. McMaster Chairman, Western Lands Board.)

Timber.—See vol. i, p. 214.

Wood sometimes used for shafts. Makes good tables when sawn and well-seasoned, but subject to boring insects. Ornamental tree; will stand lopping. Very good for mallets.—(R. J. Dalton, Wanaaring.)

White, soft wood, has the same characteristics as Whitewood (*Atalaya hemiglauca*).—(A. W. Mullen)

ILLUSTRATIONS.

"Leopard tree," Coolabah, near Bourke, March, 1904.—(R. W. Peacock.)

Mr. C. J. McMaster furnishes the following information:—

Leopard Wood, also called Bocalla, Fort Bourke, near Bourke. Plate 1 shows—in the central figure—the stage of growth before reaching maturity, and the smaller tree on the right a still earlier stage. Plate 2 shows a matured tree.

Photograph 1 illustrates the second stage of growth, and is more characteristic than the photograph given at p. 213, vol. i, of this work. Photograph 2 shows the mature tree with more abundant foliage than that shown at p. 213.

No. 41. Part XI.

Angophora lanceolata, Cav.

THE SMOOTH-BARKED APPLE.

(Family MYRTACEÆ.)

Synonyms.—See vol. ii, p. 17.

Following is the original description of *Metrosideros apocynifolia*, Salisb., a synonym. It will be observed that it was sent to England by David Burton, an early Superintendent of Agriculture, who was killed by the accidental discharge of his own gun at the Hawkesbury, in 1792.

Metrosideros apocynifolia, Salisb., *Prod. Stirp. in hort. Chapel Allerton* (1796) p. 351.

M. foliis suboppositis: laminis ellipticis, marginatis, coriaceis: nervis parallelis.

Sponte nascentem juxta Port Jackson, legit Dav. Burton.

Arbor pulcherrima foliis marginatis, quae et in aliis vides, sed multo obsoletius, ut eâ notâ hanc facile distinguas.

No. 42. Part XI.

Scolopia Brownii, F.v.M.

(Family Bixaceæ.)

Timber.—See vol. ii, p. 22.

"Mountain Cherry (*Scolopia Brownii*).—This timber from the Big Scrub, Richmond River, is close-grained, hard, and possesses all the qualities for a good golf-head, which it undoubtedly makes, having stood the tests well."—(R. T. Baker in *Golf Illustrated*, 28th July, 1905.)

No. 44. Part XII.

Callitris Macleayana, F.v.M.

(Family Coniferæ.)

Size.—See vol. ii, p. 39.

Cypress Pine (*Frenela Macleayana*).—A tree was measured with a girth of 12 feet 3 inches (3 feet from the ground). Growing 1,800 to 2,000 feet above sea-level on Bulga Mountain, head of Ellenborough River.

"It was a splendid tree, 150 feet high, and full of vigour."—(G. S. Hill, Bungay, Wingham, 27th November, 1906.)

No. 46. Part XII.

Callitris robusta, R.Br.

Aboriginal Names.—See vol. ii, p. 44.

Mr. J. G. Saxton, of Melbourne, gives "Marong" as the name for the Murray River Pine. This is another spelling. He also gives the name "Maroo" as a Victorian aboriginal name for Pine-trees in general.

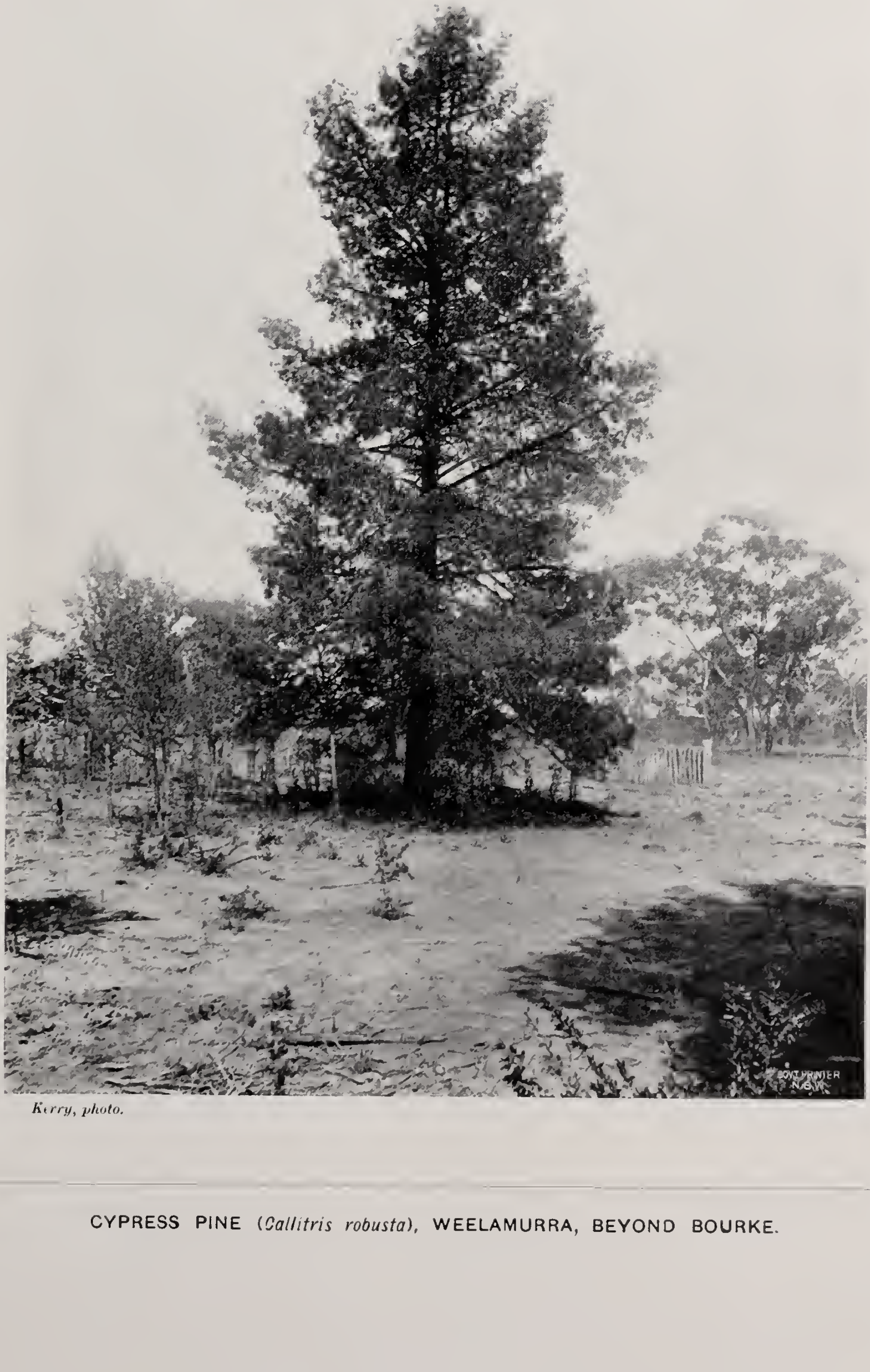
Timber.—See vol. ii, p. 44.

Cypress Pine (*Callitris robusta*, R.Br.) which I have used, and find it is of very little use for house-blocks, as it is subject to dry-rot; but will withstand white ants, and is good for flooring-boards and house-building, when not exposed to the weather or damp, the house being built on blocks. Have also used it for wire mattress frames, 3 ft. x 2 ft. doors, lining boards (it polishes well), picture frames.—(R. J. Dalton, Tinapagee, Wanaaring.)

For a microscopical examination of the timber see Dr. Fl. Tassi, *Bull. Lab. orto botanico di Siena*, viii, Fasc. 1–4, p. 12.

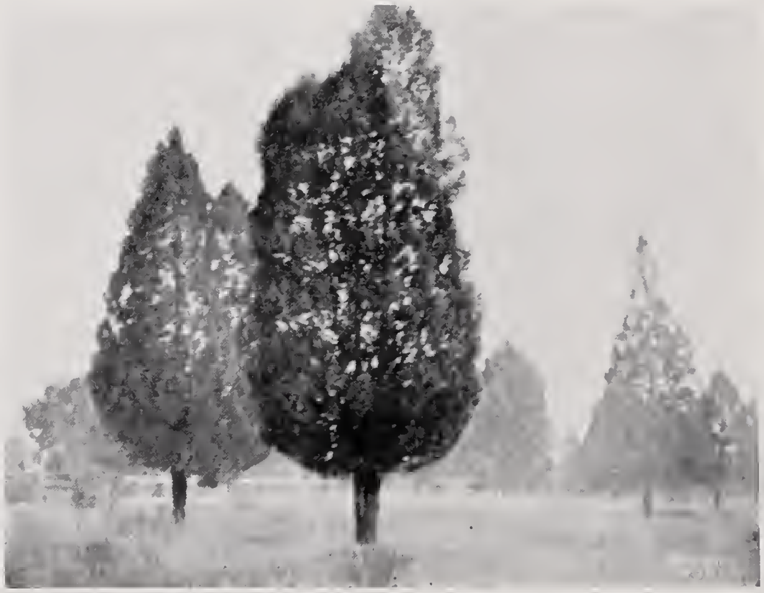
ILLUSTRATION.

"Cypress Pine," Weelamurra, beyond Bourke.—(Kerry & Co.)



Kerry, photo.

CYPRESS PINE (*Callitris robusta*), WEELAMURRA, BEYOND BOURKE.


C. J. McMaster, photo.

RED CYPRESS PINE (*Callitris calcarata*), DUBBO.

No. 50. Part XII.

Callitris calcarata, R.Br.

Habitat.—See vol. ii, p. 60; also p. 205.

Pokolbin, a few miles south-west of Maitland (R. H. Cambage) is the most easterly locality in that district known to me.

ILLUSTRATION.

"Red Cypress Pine" (*Callitris calcarata*) Dubbo, C. J. McMaster, who says: "Height 50-60 feet, picturesque, but of little commercial value."

No. 51. Part XII.

Callitris cupressiformis, Vent.

Timber.—See vol. ii, p. 62.

For an account of the microscopical study of this timber under the name of *Callitris rhomboidea*, R.Br., see Dr. Fl. Tassi, *Bull. Lab. orto botanico di Siena*, viii, Fasc. 1–4, p. 11.

No. 52. Part XIII.

Eucalyptus sideroxylon, A. Cunn.

THE MUGGA; A RED IRONBARK.

(Family MYRTACEÆ.)

Aboriginal Names.—See vol. ii, p. 67.

"Yehrip" is the Victorian aboriginal name for the Ironbark, according to Mr. J. G. Saxton.

No. 54. Part XIII.

Casuarina lepidophloia, F.v.M.

THE BELAH.

(Family CASUARINACEÆ.)

Vernacular Names.—See vol. ii, p. 79.

Following is confirmation of the statement that the "Belah" is also known as "Bull Oak" by some people:—

In pointing out that "Belah" and "Bull Oak" are really different trees, Mr. Dalton states: "The Belah is always called about Wanaaring by the name of Belah, and the only time I have heard it called 'Bull Oak' is by people coming from inside districts."

Timber.—See vol. ii, p. 81; also p. 203.

Good for firewood; sometimes used for bullock-yokes, but liable to split. No use for post or outside work.—(R. J. Dalton, Wanaaring.)

No. 55. Part XIII.

Heterodendron oleæfolium, Desf.

THE WESTERN ROSEWOOD.

(Family Sapindaceæ.)

ILLUSTRATION.

"Western Rosewood," Coonamble Park.—(C. J. McMaster.)

No. 56 (55). Part XIV.

Owenia acidula, F.v.M.

THE GRUIE OR COLANE.

(Family Meliaceæ.)

Aboriginal Names.—See vol. ii, p. 90; also p. 207.

Mr. C. J. McMaster, President of the Western Lands Board, says that the aborigines pronounce the name as if it were spelled "Goó-rooi."

Called "Eurongn" at Coonamble.

Timber.—See vol. ii, p. 90.

Good for bullock-yokes.—(R. J. Dalton, Wanaaring.)

ILLUSTRATION.

Owenia acidula near Coonamble.—(C. J. McMaster.)

No. 58 (57). Part XIV.

Casuarina glauca, Sieb.

THE SWAMP OAK.

(Family Casuarinaceæ.)

Botanical description.—See vol. ii, p. 95.

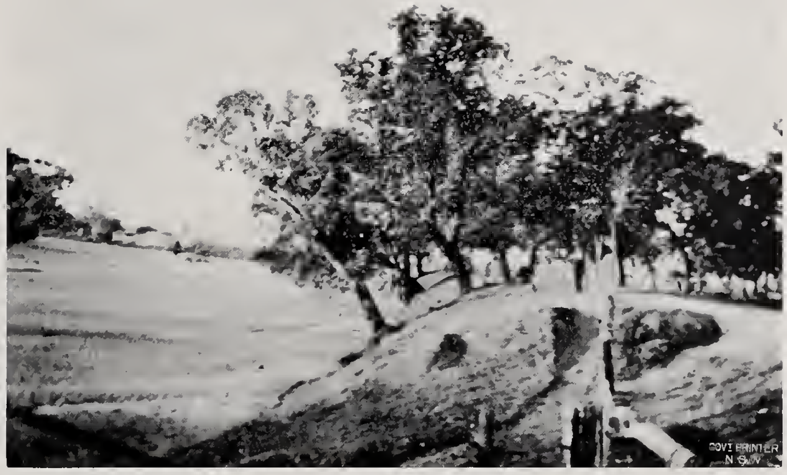
Casuarina glauca is monœcious, according to Bentham and Eastern Australian observers, but L. Diels, in Engler's Jahrbuch, vol. xxxv, speaks of it as diœcious in West Australia.

Timber.—See vol. ii, p. 98.

"Swamp Oak (*Casuarina glauca*). This is a hard, close-grained, dark-coloured timber, which makes a durable, serviceable head."—(R. T. Baker in *Golf Illustrated*, 28th July, 1905.)

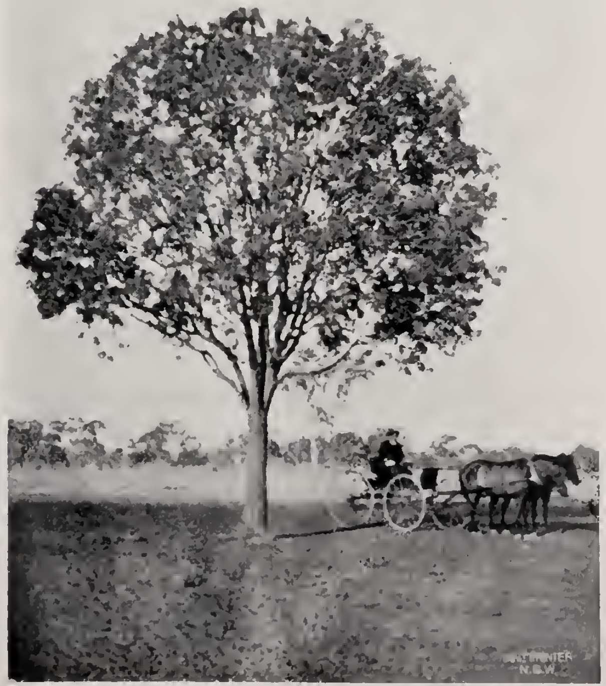
ILLUSTRATION.

Casuarina glauca, Wyong Creek, Tuggerah Lake.—(Kerry & Co.) The banks of the saltwater creek are lined with trees of this species.



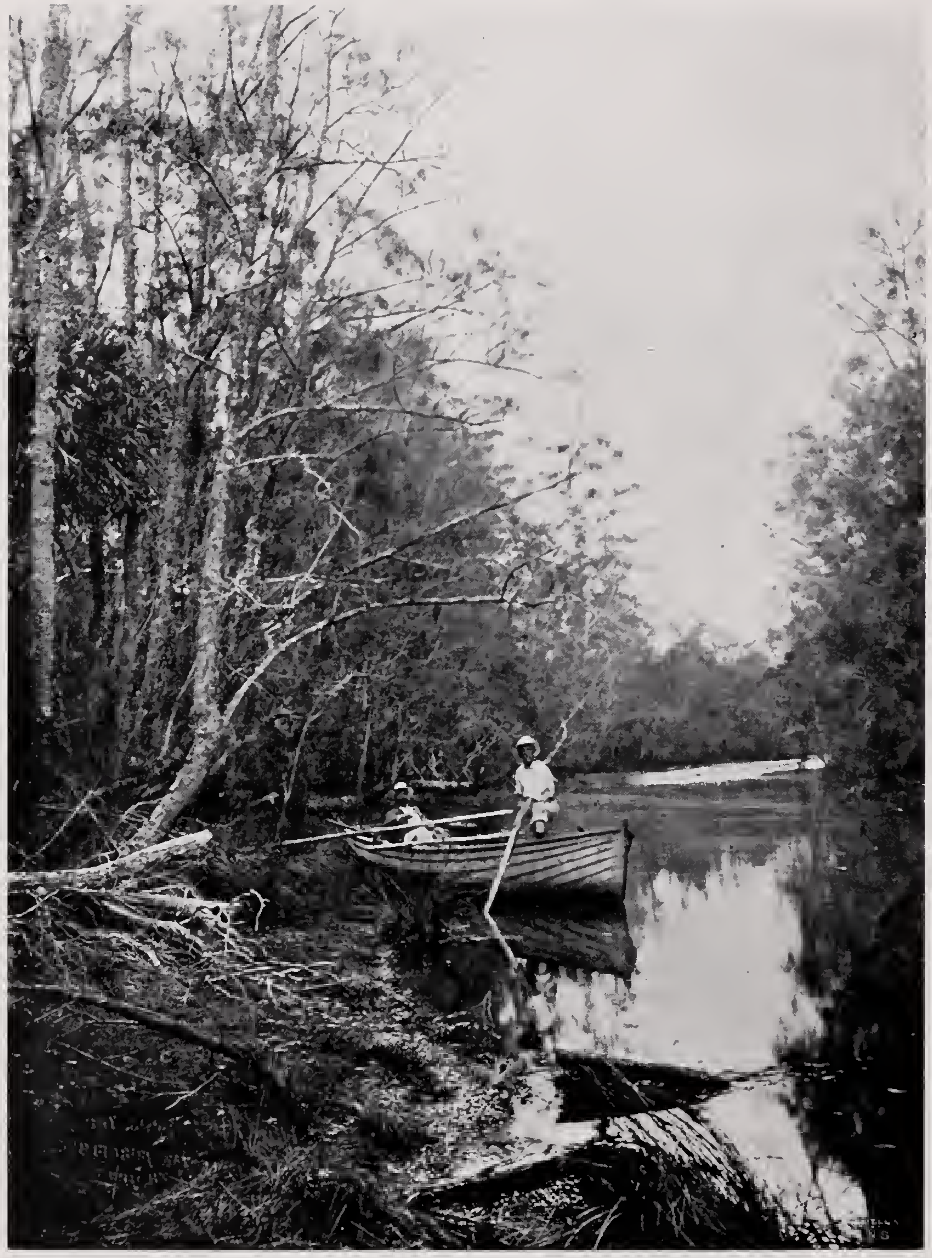
C. J. McMaster, photo.

WESTERN ROSEWOOD *(Heterodendron oleæfolium)*, COONAMBLE PARK.



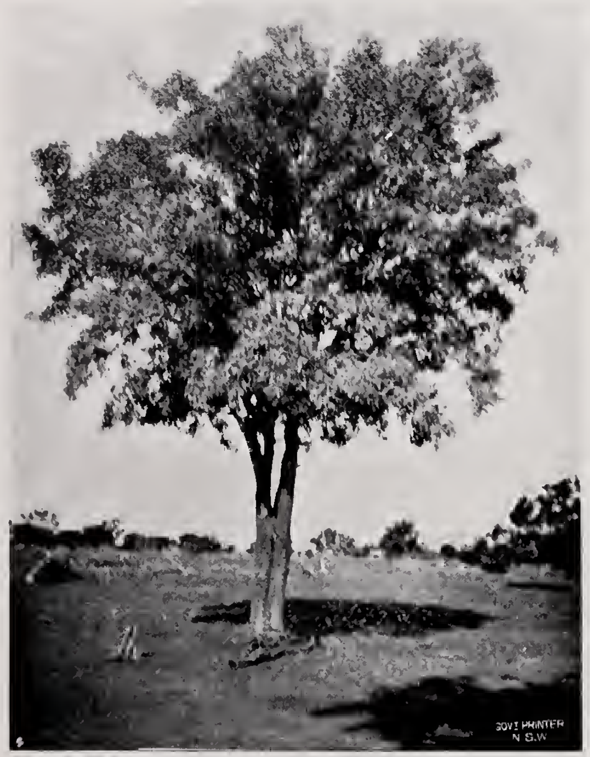
C. J. McMaster, photo.

Owenia acidula, NEAR COONAMBLE.



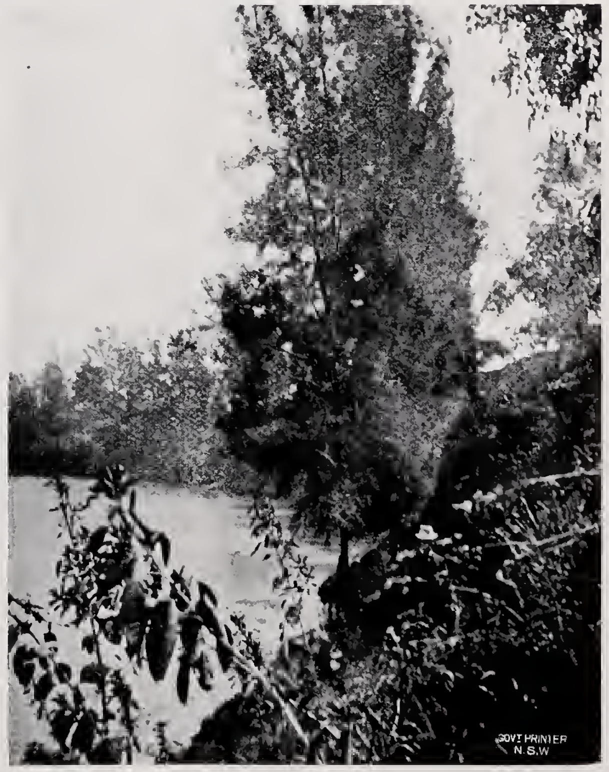
Kerry, photo.

SALT-WATER SWAMP-OAK *(Casuarina glauca)*, WYONG CREEK, TUGGERAH LAKE.



C. J. McMaster, photo.

THE WESTERN WHITEWOOD *(Atalaya hemiglauca)*, FORT BOURKE.



C. J. McMaster, photo.

RIVER OAK *(Casuarina Cunninghamiana)*, CASTLEREAGH RIVER, NEAR DUBBO.

No. 60. Part XV.

Acacia melanoxylon, R.Br.

THE BLACKWOOD.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Aboriginal Names.—See vol. ii, p. 107.

"Berringama" is the Victorian aboriginal name for the native Lightwood tree according to Mr. J. G. Saxton.

No. 62. Part XV.

Casuarina Cunninghamiana, Miq.

THE RIVER OAK.

(Family CASUARINACEÆ.)

ILLUSTRATION.

"River Oak," banks of Castlereagh River, near Dubbo.—(C. J. McMaster.)

No. 63. Part XV.

Atalaya hemiglauca, F.v.M.

THE WESTERN WHITEWOOD.

(Family SAPINDACEÆ.)

Aboriginal Name.—See vol. ii, p. 123; also p. 211.

"Birrah" of the aborigines of the Bourke district.—(A. W. Mullen.)

Timber.—See vol. ii, p. 123; also p. 211.

The Whitewood will stand lopping; the wood rots if the face bark be taken off; borers get into it where exposed.

ILLUSTRATION.

"Western Whitewood," Fort Bourke, near Bourke, about 30 feet high.—(C. J. McMaster.)

No. 64. Part XVI.

Acacia pendula, A. Cunn.

THE WEEPING MYALL.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Bark.—See vol. ii, p. 127.

A sample of this bark from Yandarlo, Wilcannia, afforded the author (*Proc. Roy. Soc. N.S.W.*, 1888, p. 269) 3·25 per cent. of tannic acid and 14·52 per cent.

of extract. Height of tree, 10 to 12 feet; diameter, 4 to 6 inches; collected September, 1887; analysed August, 1888. A typical representative of the dry country wattle-barks. It seems to consist of nothing but flakes and layers of fibre.

ILLUSTRATION.

The accompanying illustration, "Boree trees on the railway-line near Whitton," which appeared in the "New South Wales Railway Budget" for 1st June, 1906, affords an excellent example of the good service the New South Wales railways perform in the preservation of the indigenous flora. They are almost invariably fenced in, and hence serve as an asylum for species like the present one, which would otherwise be eaten out.

No. 65. Part XVI.

Eucalyptus amygdalina, Labill.

A PEPPERMINT.

(Family Myrtaceæ.)

Aboriginal Names.—See vol. ii, p. 132. Mr. J. G. Saxton, of Melbourne, gives the following Victorian aboriginal names:—

"Woorragee," for the "Native peppermint-tree."

"Darkbonee," for the "Native peppermint gum-tree.

I hope their names will be inquired into and the precise species ascertained. Perhaps they refer to *E. odórata*, also known as "Peppermint" in Victoria, chiefly in the west or north-west.

No. 68. Part XVII.

Casuarina stricta, Ait.

THE DROOPING SHE-OAK.

(Family Casuarinaceæ.)

Fruits.—See vol. ii, p. 143.

I have received cones from South Australia (Mr. Walter Gill), 2½ inches long and up to 1¾ inches broad.

ILLUSTRATION.

"Forest Oak," Dubbo.—C. J. McMaster, who says, "Grows probably 30 feet. Young tree."

No. 70. Part XVII.

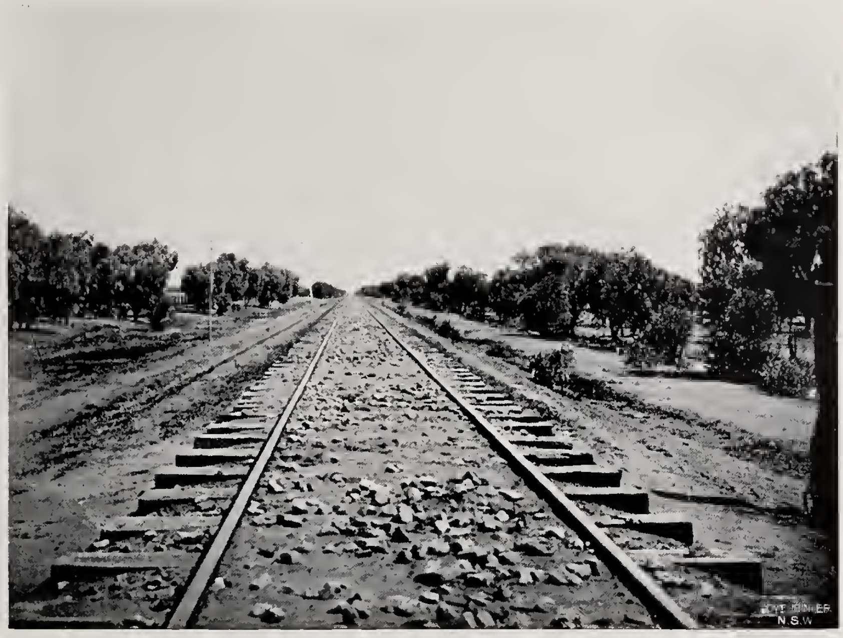
Flindersia australis, R.Br.

THE NATIVE TEAK.

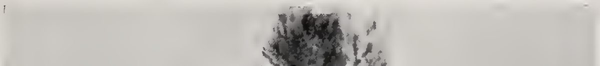
(Family Meliaceæ.)

Timber.—See vol. ii, p. 153.

A large and fairly tall tree, with deciduous bark. Wood bright-yellow, of a distinctive odour; elastic, very oily, hard, strong, and durable. Iron fastened into it will not rust, as is the case with nearly every other kind of timber.

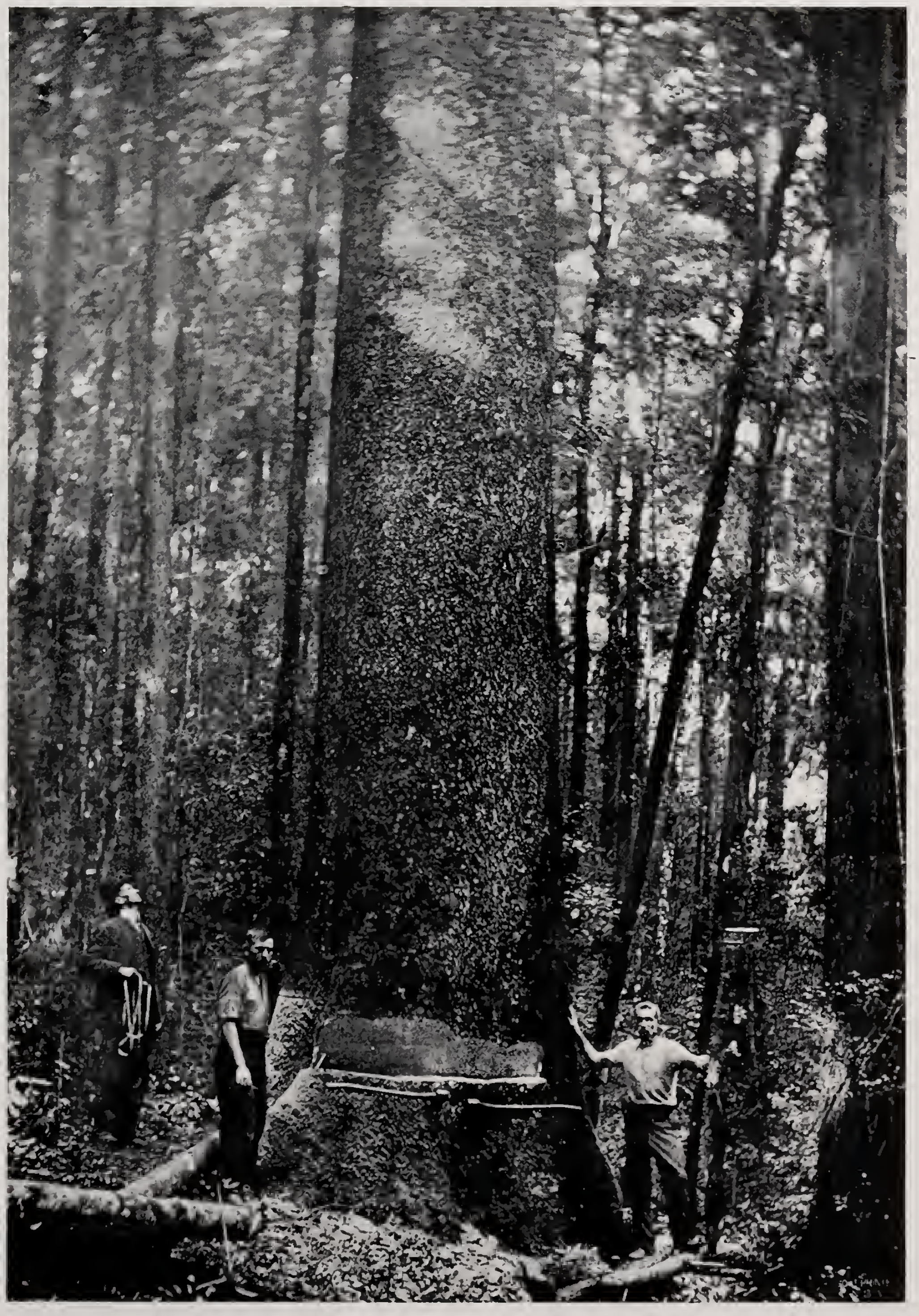


BOREE TREES *(Acacia pendula)* ON THE RAILWAY LINE, WHITTON.

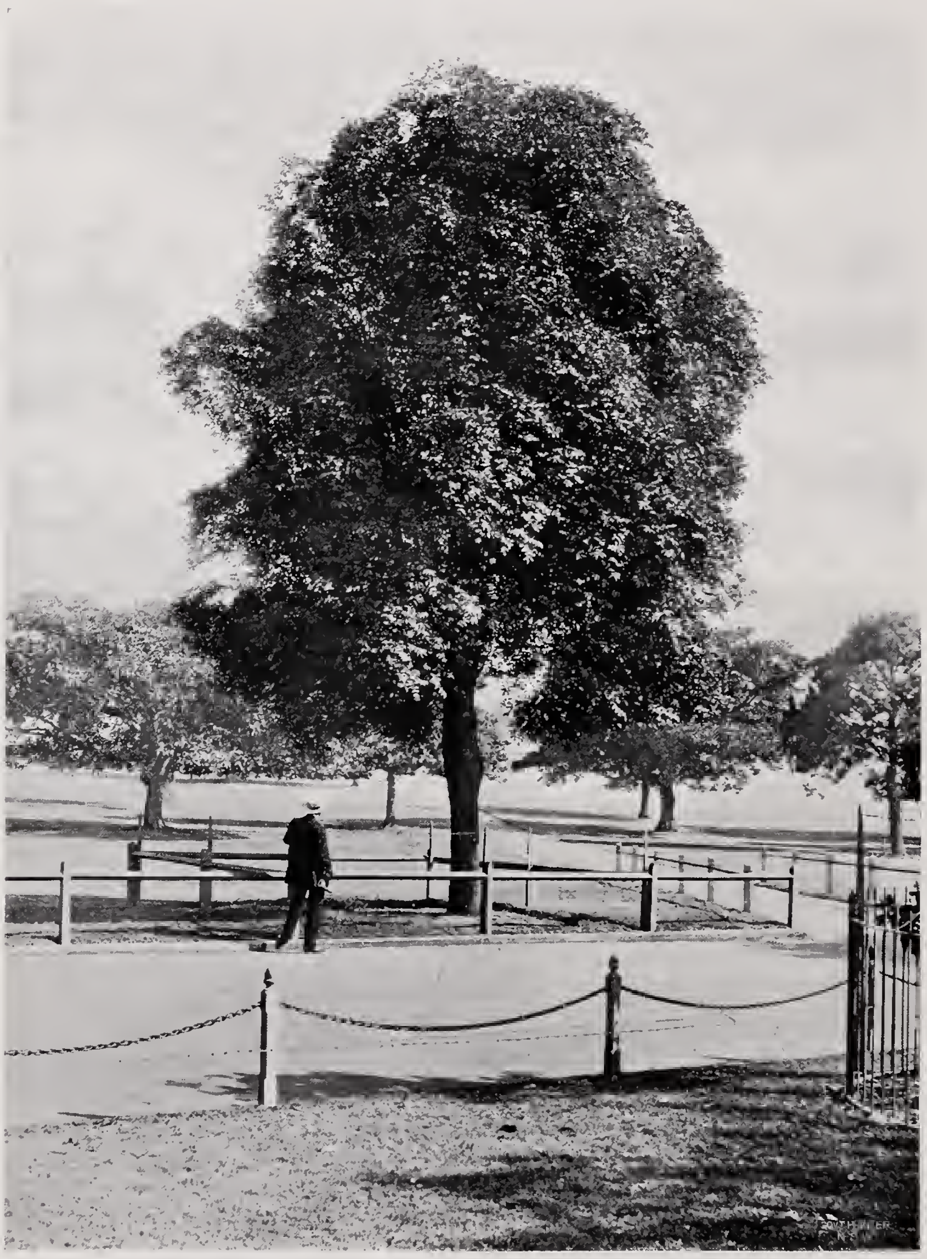


C. J. McMaster, photo.

FOREST OAK *(Casuarina stricta)*, DUBBO.



A GIANT TEAK *(Flindersia australis)*, NORTHERN N.S.W.



Flindersia australis, MAIN AVENUE, OUTER DOMAIN, SYDNEY.

Useful for general building purposes, especially verandah flooring-boards (it having of late years taken the place of Beech, being much more plentiful and cheaper), coach-building, railway-carriage, and coopers' work. It makes an excellent substitute for brass plummer blocks, in which (without oil) shafting may be run at a fairly high rate of speed. In this way it has been found especially suitable for the shafts or spindles of heavy grindstones. It is one of our most useful and durable timbers.—(*Cat. Queensland Forestry Mus.*, 1904.)

Size.—See vol. ii, p. 154.

In the Sydney newspapers of 14th May, 1906, the following paragraph appeared:—

"Murwillumbah.—Mr. J. Riley, of Mooball, brought the largest teak log ever drawn in the district into the local station. It was 16 feet 6 inches in girth, being portion of a log containing 10,000 feet, estimated to be worth over £30."

Habitat.—See vol. ii, p. 154.

"Crow's Ash, or Flindersia (*Flindersia australis*).—Trees do not exist in large numbers, but odd ones are met with at frequent intervals throughout most of our coastal scrubs; also in the Nanango and Toowoomba districts."—(*Cat. Queensland Forestry Mus.*, 1904.)

ILLUSTRATIONS.

(*a*) "A Giant Teak"—barrel, 92 feet; girth at stump, 22 feet; contents, 17,654 feet superficial. This block and particulars are borrowed from the Annual Report of the Forest Department of New South Wales, 1905-6.

(*b*) "Planted tree in the Main Avenue," Government Domain, Sydney.—(Government Printer.)

No. 71. Part XVIII.

Flindersia Schottiana, F.v.M.

THE CUDGERIE.

(Family MELIACEÆ.)

Timber.—See vol. ii, p. 157.

"Cudgerie or Long Jack (*Flindersia australis*).* This is from the Big Scrub, Richmond River. It is a beautiful, light coloured timber, hard, and of medium specific gravity, and promises well."—(R. T. Baker in *Golf Illustrated*, 28th July, 1905.)

No. 76. Part XIX.

Casuarina Luehmanni, R. T. Baker.

THE BULL OAK.

(Family CASUARINACEÆ.)

Habitat.—See vol. ii, p. 180.

Mr. E. C. Andrews gives me Deepwater (New England) as an additional locality.

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[*] For many years it was generally believed that the Cudgerie was *F. australis*. See p. 156 (Part XVIII).

No. 79. Part XXI.

Casuarina inophloia, F.v.M. and Bailey.

THE THREADY-BARKED OAK.

(Family CASUARINACEÆ.)

ILLUSTRATIONS.

Photograph of a trunk, showing the thready or sub-fibrous bark.

Photograph of some trees near Warialda.—(Rev. H. M. R. Rupp.) The smaller trees are also *inophloia*.

No. 83. Part XXIII; also No. 89. Part XXV.

Dysoxylon Fraseranum, Benth.

THE ROSEWOOD.

(Family MELIACEÆ.)

Fruits.—See vol. iii, p. 31.

With reference to the Figure F, Plate 85, while Rosewood fruits are normally as figured, I have seen some which are distinctly egg-shaped.

ILLUSTRATION.

"Rosewood," northern New South Wales. This block originally appeared in the Annual Report of the Forest Department of New South Wales, 1905–6. It is there labelled *Dysoxylon Lessertianum*, which is a synonym of *D. Fraseranum*, as explained in this work, Part XXIII, p. 28.

No. 85. Part XXIII.

Acacia decurrens, Willd.,

AND ITS VARIETIES.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Aboriginal Name.—See vol. iii, p. 47.

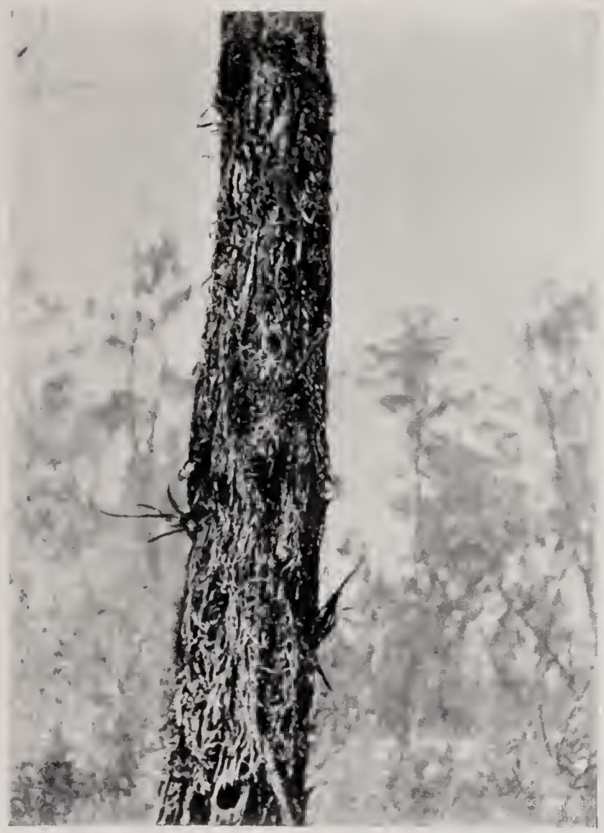
"Tooloy" is the native name for Wattle-tree gum according to Mr. J. G. Saxton, Victoria.

Bark.—See vol. iii, p. 48.

The following are references to recent literature:—

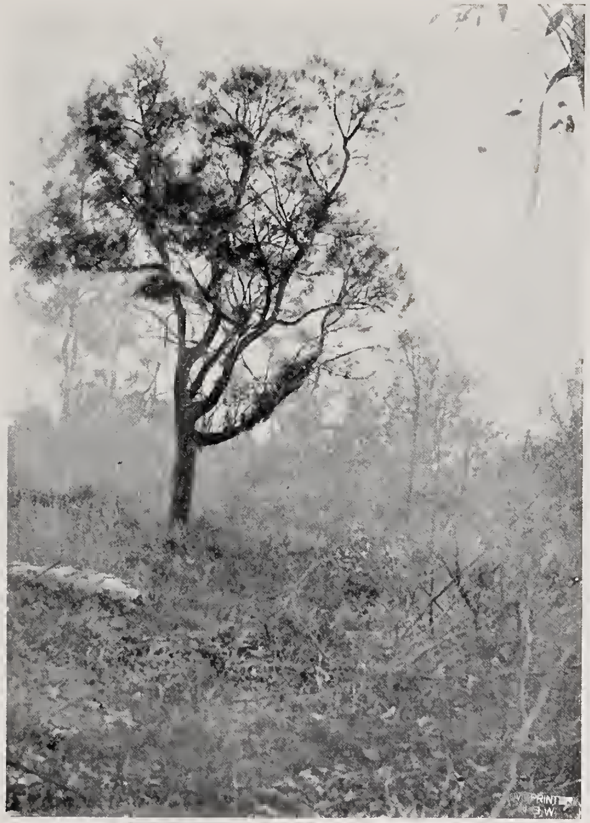
Über Black Wattle Wirtshaft in Natal. Von Dr. W. Holtz, Grogsherzoglich. Badischen Forstpraktikanten. Der Tropenpflanzer, July, 1906, p. 445.

See also Bulletin No. 11 of the Hawaii Agricultural Experiment Station, "The Black Wattle (*Acacia decurrens*) in Hawaii," by Jared G. Smith (1906).



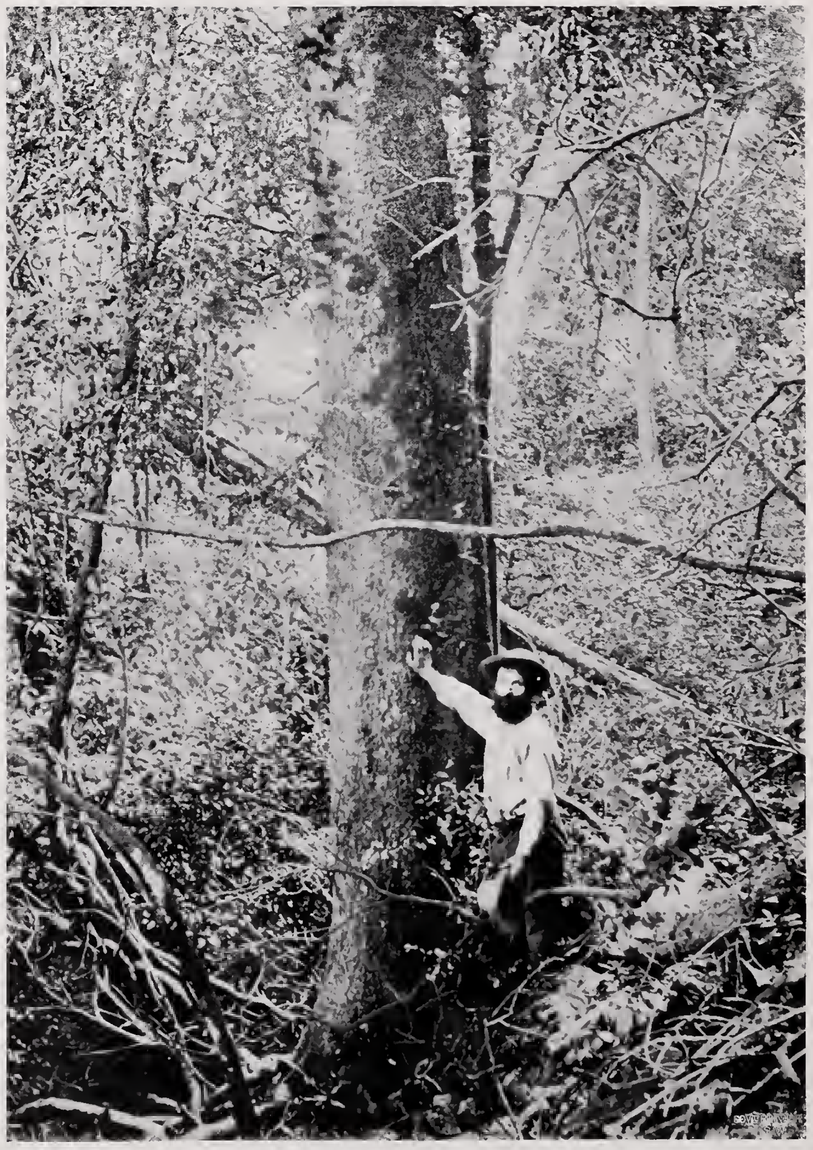
H. M. R. Rupp, photo.

Casuarina inophloia, WARIALDA. SHOWING THREADY BARK.

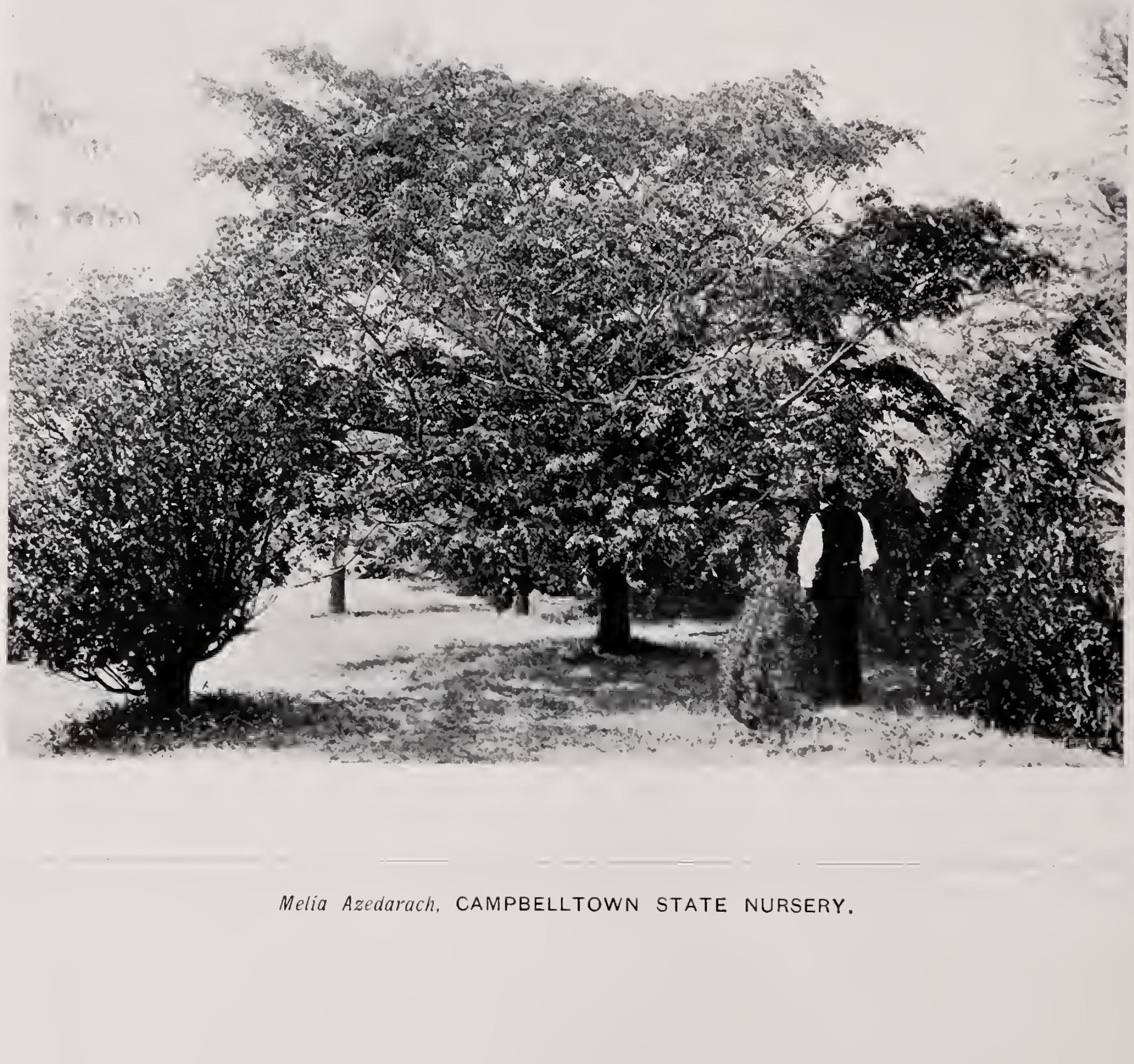


H. M. R. Rupp, photo.

Casuarina inophloia, WARIALDA.



ROSEWOOD *(Dysoxylon Fraseranum)*, NORTHERN N.S.W.



Melia Azedarach, CAMPBELLTOWN STATE NURSERY.

No. 89. Part XXV.

Dysoxylon pachyphyllum, Hemsl.

THE APPLE-TREE OF LORD HOWE ISLAND.

(Family MELIACEÆ.)

At p. 82, vol. iii, I stated that the description of this species was not then available. The issue of the *Kew Bulletin* (No. 2) for February, 1907, has since come to hand, and I transcribe the description accordingly :—

Dysoxylon pachyphyllum, Hemsl., in Hook. Ic. Plant. t. 2827, ined. [Meliaceæ]; *D. Fraserano* proximum sed foliis crassis coriaceis obovato-oblongis obtusissimis vel rotundatis differt.

Arbor 12–18 m. alta, fere undique glabra, ramis florigeris crassis. *Folia* paripinnata, cum petiolo communi usque ad 40 cm. longa ; foliola 8–12, breviter petiolulata, petiolulis incrassatis, 4–15 cm. longa. *Paniculae* augustae, pauciflorae (an semper ?), foliis breviores. *Flores* 3–4 mm. diametro, bene evoluti non visi, tetrameri, puberuli. *Calycis* dentes deltoidei. *Petala* crassa. *Stamina* 8 ; antherae tubi staminei lobos paulo superantes. *Stigma* peltatum. *Capsula* subglobosa, 3–4 cm. longa, coriacea, obscure 3-loba, 3-sperma. *Semina* ovoidea, in arillo crasso cupuliformi usque ad medium immersa.—*D. Fraseranum*, F. Muell., Fragm. Phytogr. Austral., vol. ix, p. 61, quoad plantam ex insula Lord Howe Island ; Hemsl. in Ann. Bot., vol. x, p. 234.

Australia. Lord Howe Island, C. Moore, 24, 35.

Hemsley's plate in Hooker's *Icones Plantarum* t. 2827 has since been published (December, 1907).

No. 92. Part XXV.

Melia Azedarach, L., var., *australasica*, C. DC.

THE WHITE CEDAR.

(Family MELIACEÆ.)

ILLUSTRATION.

Planted twenty years ago ; 15 feet high ; wonderful spread of branches. Does well at Campbelltown State Nursery, where the photograph was taken.

No. 98. Part XXVII.

Eucalyptus macrorrhyncha, F.v.M.

RED STRINGYBARK.

(Family MYRTACEÆ.)

Aboriginal Names.—"Warngar," native, Stringybark. "Toolang," native, Stringybark forest.—(J. G. Saxton, Victoria.)

No. 109.

Eucalyptus Muelleriana, Howitt.

The Yellow Stringybark.

(Family MYRTACEÆ)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. Muelleriana,* Howitt, *Trans. Roy. Soc. Vict.,* 1890.

The bole is straight and rather massive, with moderately-spreading branches, and a fibrous and dark-grey bark, which is more deeply and coarsely fissured than that of *E. piperita*—in fact, resembling the bark of *E. capitellata,* where that species grows to a good size in favourable localities. The bark is persistent up to the small boughs, which are, more or less, smooth. The leaves of the aged trees are lanceolar, falcate, and more or less unequal-sided, rather dark green in colour, equally shining on both sides, and usually three to five times as long as broad, with a sharp apex.

The seedlings have narrow lanceolar opposed leaves of a dark green, shining, but paler on the underside. In the earlier stages, they are frequently more or less beset with small tufts of hairs. I have noticed that the leaves are still opposed in young plants 2 feet to 3 feet in height. In young saplings, and those some feet in height, the leaves are rather broad, lanceolar, or ovate lanceolar in shape, less shiny on the lower face, much dotted with transparent pores, and rather thin in substance. A marked feature in the saplings of this eucalypt, and one by which it can be distinguished almost at a glance from those of other stringybarks, is that the broadly lanceolar and pointed leaves have a tendency to assume a horizontal position rather than a vertical one, and this gives the saplings a shining appearance. The stems of these saplings and young trees are somewhat smoother than those of *E. piperita, E. capitellata,* or *E. macrorrhyncha.* The umbels are usually solitary, and there is a marked tendency in the eucalypt for them to become strongly paniculated. The buds are from 3–12 in most of the umbels. The stalk is frequently slightly flattened, and not much longer than the buds, and the stalklet nearly as long as the calyx-tube; the lid semiovate to hemispheric, smooth, and occasionally slightly pointed; the stamens (rather sparse) are large and reniform, like those of *E. capitellata.* Fruit almost hemispherical to approaching semiovate; the rim flat, or even slightly inverted, not wide, valves deltoid, small, and inserted, or, rarely, more slightly prominent; 4-valved, less frequently 3 to 5-valved.—(Howitt, *op. cit.*)

Botanical Name.—*Eucalyptus,* already explained (see Part II, p. 34); *Muelleriana,* in honour of the late Baron von Mueller, Government Botanist of Victoria.

Vernacular Names.—Called "Yellow Stringybark" in Gippsland, because the bark is very yellow when freshly cut; the timber is also yellowish. Occasionally it goes by the same name in coastal New South Wales.

At one time I hoped that this yellowness (where evidence of its presence is available) might be a useful diagnostic character. It is certainly useful sometimes, but it breaks down in that it is observable in *E. eugenioides* and other species. The presence of this colouring matter in various trees is worthy of investigation by the chemist, as it may be of some aid to diagnosis not clearly understood at present.

At Wingello, in the Goulburn district, it goes by the name of "White Mahogany," but it must not be confused with the true White Mahogany, *E. acmenioides*; in the coast districts it is sometimes called "Blackbutt," like *E. pilularis*, to which it is closely related.

Sometimes in northern New South Wales, it goes under the name of "Mountain Stringybark," and in other localities simply "Stringybark," and also "Messmate."

Aboriginal Names.—I know of none.

Synonyms.—*E. dextropinea*, R. T. Baker; *E. lævopinea*, R. T. Baker; *E. pilularis*, Sm. var. *Muelleriana*, Maiden.

Bark.—More or less fibrous on the trunk. Sometimes the branches are quite smooth, at others covered, more or less, with fibrous bark. The texture of the rough bark also varies, sometimes it is rather compact, like that of the common Blackbutt; in other trees it is densely fibrous, and well worthy of the name of Stringybark.

Timber.—It is a valuable fissile timber, to all intents and purposes identical with blackbutt; that will be its best description.

In New South Wales it is valued for building purposes, being used for flooring and weatherboards, &c. Timber-getters describe it as "a very clean timber."

> The timber of this tree is usually darker in tint than *E. piperita*. It is fissile, free from gum veins or shakes, clear in the grain, and enjoying a great reputation for durability. It is used for fencing and sawing, and, according to Mr. Macalpine, of Yarraville, who has lived for forty years in South Gippsland, fences are still standing with posts split from this eucalypt, which have been from thirty to forty years in the ground. I have, myself, observed posts of this timber standing in fences at Woodside since 1859. The local name of this tree is "Yellow Stringybark."—(Howitt, *Trans. Roy. Soc. Vict.*, 1890.)

The late Mr. Clement Hodgkinson, a Commissioner of the Melbourne Harbour Trust, interested himself in ascertaining the value of the timber of the Yellow Stringybark, and there is no doubt that it is one of the best Victorian timbers. Following are extracts from Mr. Hodgkinson's report to the Harbour Trust, of the 17th January, 1891:—

> The Inspector-General of Public Works having (on the 6th December last, in reply to a letter from me to him on the 23rd November) informed me that the piles of the Welshpool Jetty were driven during 1859, and that, after the recent burning of that jetty it was repaired, "the stumps of the piles were found to be in such excellent preservation that they were not withdrawn, but short pieces were spliced on," my colleagues and myself were able to obtain specific and reliable evidence to the effect that these piles were Yellow Stringybark, cut during August, 1859, and driven during that year. We carefully scrutinised these old piles when the tide was low, and found them to be perfectly sound, uninjured by sea-worms, and having the appearance of clean, well-seasoned timber, in excellent condition, notwithstanding that these piles had been in sea water more than thirty-one years.
>
> With reference to the wharf at Port Albert, the Inspector-General of Public Works, in his letter to me, already alluded to, stated that "Yellow Stringybark and Gum are in use in the wharf and approaches to Port Albert. It is reported that, whereas the Gum is fast decaying, the Stringybark remains sound."

My colleagues and self, after examination of the Port Albert Wharf, now corroborate this statement; the Yellow Stringybark used in the construction of this wharf is quite sound.

We also inspected many old posts and rails, beams, planks, weatherboards, &c., of this kind of Eucalyptus, and we all noticed that it seemed less liable to warp than any other kinds of Eucalyptus, a fact mentioned in one of my previous reports on Yellow Stringybark. As, in addition to the specially important quality of great durability in the sea water, Yellow Stringybark has a specific strength very much greater than that of Red Gum and than that of Jarrah (as shown in the tabulated results of my tests of Yellow Stringybark, inserted in my report of 5th July, 1890), my colleagues and myself have arrived at the conclusion that this species of Eucalyptus may be used for piles and other purposes in the Melbourne Harbour Works.

Size.—A large tree. Trees 60 feet high, with a trunk diameter of 3 feet, are not uncommon.

Habitat.—It is found in South Australia, Victoria, and New South Wales.

In Victoria, it has an extensive range in the western half of Gippsland. It also occurs in the Grampians and other localities nearer to South Australia.

In South Australia it is found in the Mount Lofty Range.

It is, however, most developed in New South Wales, extending from south to north, and I do not doubt that it occurs in Queensland, although it has not been formally recorded from that State.

Thus in New South Wales we have it from Twofold Bay, near Nelligen, the Goulburn district, Milton, and Mount Kembla.

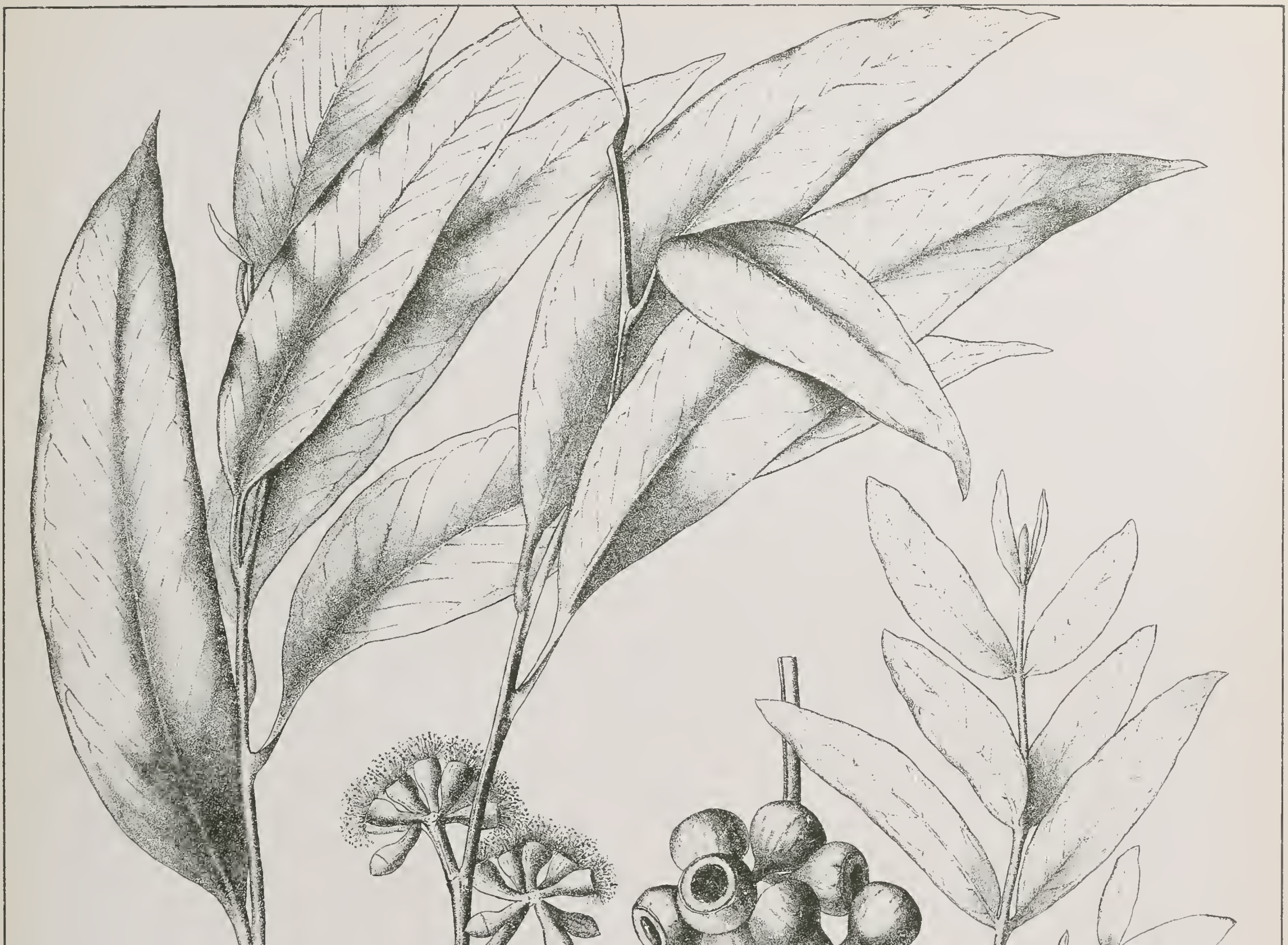
Western localities are Kanimbla Valley and the Rylstone district.

Going north, we have it on the Liverpool Range and eastern New England as far as Tenterfield. It is very widely diffused in the northern districts and presents a good deal of variation there.

It occurs in broken country generally, preferring the taluses of the hills in moderately good soil. It does not like exposed situations.

EXPLANATION OF PLATE 113.

1. Seedling.
2. Flowering twig. Note the clavate (club-shaped or rounded) buds.
3. Twig bearing fruits. Note their nearly spherical shape and marked rims.



M. Flockton, del. et lith.

THE YELLOW STRINGYBARK.

(*Eucalyptus Muelleriana*, HOWITT.)

No. 110.

Acacia rigens, A. Cunn.

The Nealie.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. rigens,* A. Cunn., in G. Don, *Gen. Syst.*, ii, 403.

A tall shrub or small tree, either quite glabrous, or pale, or hoary, with a minute pubescence; branchlets somewhat angular.

Phyllodia linear-subulate, rather rigid, nearly terete, straight or incurved, usually 2 to 3 inches long, and very finely striate, with 3 to 5 scarcely prominent nerves, with a short, innocuous, oblique or recurved point, but in some specimens 3 nerves on each side are prominent, at least at the base.

Peduncles very short, bearing each a globular head of about 20 flowers, mostly 5-merous.

Sepals spathulate, united to about the middle.

Petals smooth.

Pod linear, straight or curved, flat, about 1½ lines broad, much contracted between the seeds, the valves coriaceous and convex at the seeds.

Seeds ovate, longitudinal; funicle with several folds, the last dilated into a turbinate, almost cup-shaped, aril.—(B.Fl. ii, 337.)

In Part XVI, page 130 of this work, I published the following note:—

The "Nealie," "Nelia," or "Nilyah." What is it?

In September, 1886, I received from the late K. H. Bennett, of Ivanhoe, *viâ* Hay, some bark, with the following label:—"No. 5, *Nealie, Acacia sp.*" He gave the following information:—"Small tree, 12 to 15 feet in height, timber exceedingly hard and tough and possessed of a very agreeable perfume; used by natives in manufacture of weapons, &c. Stock will not eat the leaves, even when in a starving condition. Very plentiful in some localities."

In 1887, the late Baron von Mueller received from Mrs. Holding, of "the Upper Darling River," specimens, with the following particulars:—"Nelia of the aborigines. Wood of Myall odour; boughs erect; dry ground."

In 1902, Acting Forester T. Miller, of Wilcannia, in official correspondence (117-02) referred to a wattle as Nelia.

In April, 1904, I received (through Mr. R. H. Cambage) from Mr. J. E. Carne, Assistant Government Geologist, some twigs labelled "Nilyah. Obtained from 14 miles south-west of White Cliffs. Said to be bushy, and inclined to follow damp courses."

Usually only bare leaves (phyllodes) have been sent, and, on one occasion, I received a few dead flowers. I have not failed to importune my correspondents, but from various circumstances they have been unable to send me twigs in flower, and also pods of the Nelia. Will anyone help?

The leaves are, as a rule, silvery white, like those of the Myall, but they are usually more erect and more rigid than those of the latter. Different botanists have labelled the plant *Acacia pendula* (which is of course the Weeping Myall) and *Acacia homalophylla* (the Yarran); but it is mere guess-work to name the Nelia in the absence of good flowers, and perhaps of pods also.

To this request I obtained assistance from the following:—

1. Mr. D. E. Fraser, then Inspector of Schools, Broken Hill (now of Yass). He very kindly communicated with several teachers in his district.

2. Mr. O'Reilly, teacher, Public School, White Cliffs.

3. Mr. C. J. Ivey, teacher, Public School, Milparinka.

4. Mr. Andrew C. Loder, Assistant Forester, Broken Hill, who sent specimens from Kars, some 40 miles south-east of Broken Hill.

The specimens supplied by these gentlemen enable me to refer this Wattle to a broad-leaved (phyllode) form of *Acacia rigens.* The typical form of the species has linear-phyllodes as figured.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *rigens*, Latin, stiff or on end, as one's hair is said to stand. This, while appropriate to all forms of the species, is particularly appropriate when applied to the typical form.

Vernacular Names.—The typical form is known as "Needle-bush." The broader-leaved forms go under the name of "Nealie" (spelled also "Nelia" or "Nilyah"). We have a number of Needle-bushes, some of them Wattles, some of them Hakeas, Grevilleas, and even other genera. I, therefore, have proposed the name "Nealie" for the species generally.

Aboriginal Names.—The name "Nealie," quoted under "Vernacular Names" is, I believe, of aboriginal origin, but I have no information concerning it.

Synonym.—*A. chordophylla*, F.v.M., in *Linnæa*, xxvi, 612, and *Pl. Vict.* ii, 11.

Leaves.—I have already drawn attention to the variation in the width of the leaves (phyllodes). The broader forms are; some of them, beautifully silvery, rendering their foliage highly ornamental. The shrub or small tree is accordingly well worthy of cultivation, for that reason alone, in the drier parts of the State.

Fruits.—Note the pendulous seeds.

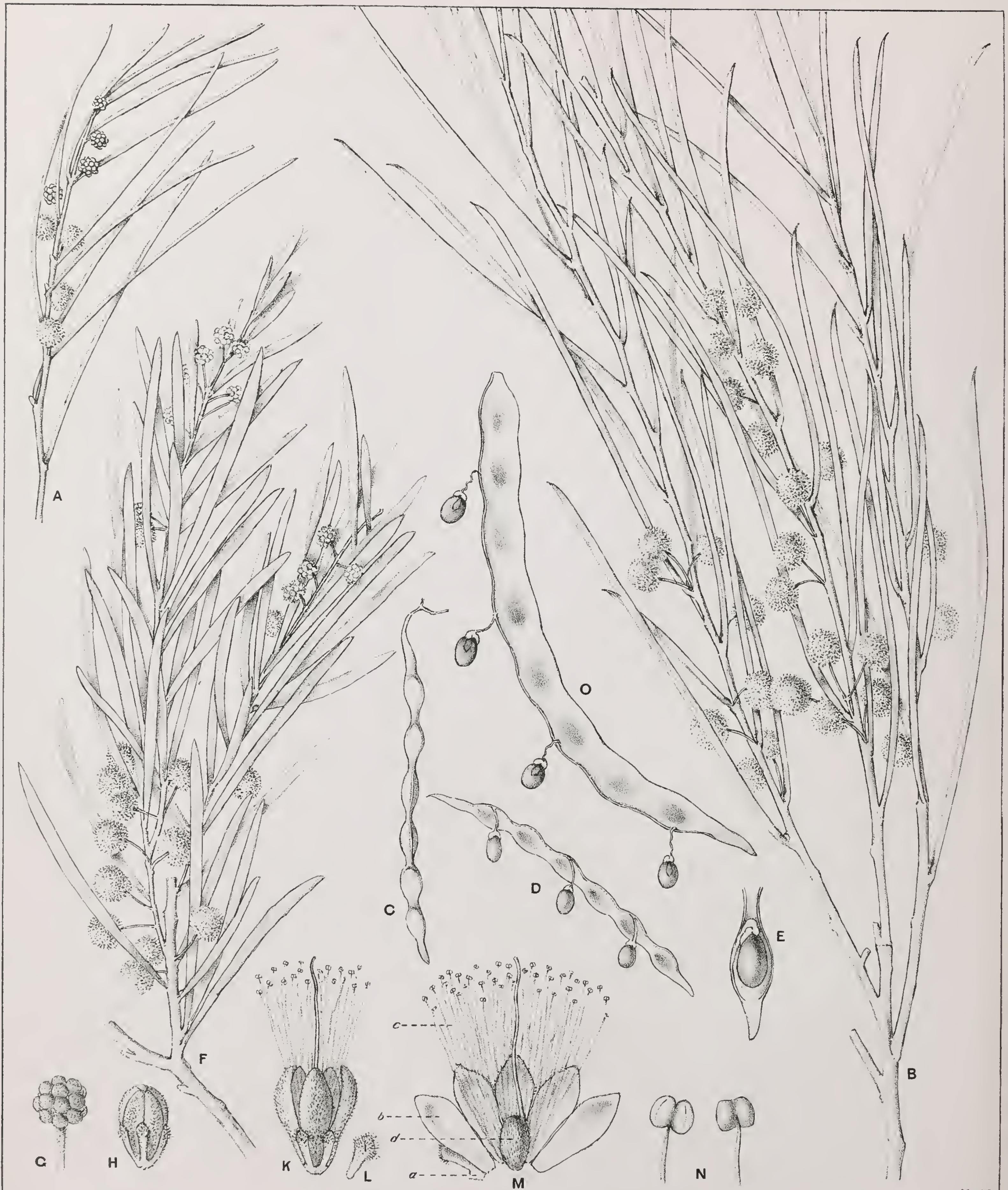
Bark.—It is stringy, flaky, and of no economic value.

Bark from an old tree, from near Hay, N.S.W., yielded the author 6·26 per cent. of tannic acid and 19·05 per cent. of extract.—(*Proc. Roy. Soc. N.S.W.*, 1887, p. 88.)

It consists of but little else than layers of fibre.

Timber.—Dark-coloured rich brown, much resembling that of Myall; of pleasant though not strong odour. Useful for such purposes as tool-handles, but this timber is of limited employment because of its small size.

Size.—A shrub or small tree. I have never seen it more than 20 feet high.



THE NEALIE.

(*Acacia rigens*, A. CUNN.)

Habitat.—This species is found in Victoria and South Australia, and as far as New South Wales is concerned, it is a dry-country wattle—one of the western species. Endeavour is made to represent the western species in this work, and through the courtesy of the Western Land Board and its officers, it may be possible to deal with one western tree in every Part. At all events endeavour will be made to do this.

In the National Herbarium, besides the localities already mentioned, we have it from Wyalong, Bygo Run, in the Wagga Wagga district, the Harvey Range, near Dubbo, Ivanhoe, *viâ* Hay, and Angledool. All these are of the typical form.

EXPLANATION OF PLATE 114.

A. Type-specimen of flowering twig of Needle-bush, from the Lachlan district.—(J. Duff.)
B. Flowering twig of Nealie from Kars, near Broken Hill.—(A. C. Loder.)
C. Pod of the same.
D. One valve of pod (C) showing pendulous seeds.
E. Seed of (C) magnified.
F. Flowering twig of broad-leaf Nealie from Milparinka.—(C. J. Ivey.)
G. Flower-head of the same.
H. Bud of the same.
K. Flower of the same.
L. Bract of the same.
M. Flower, opened out, showing:—
  (*a*) Calyx.
  (*b*) Corolla.
  (*c*) Stamens.
  (*d*) Pistil.
N. Stamens.
O. One valve of pod from Port Augusta, South Australia (J.H.M.), showing pendulous seeds. Compare (D).

N.B.—The structure of the flower and fruit is practically identical in all the specimens.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acmenioides, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *microcorys*, F.v.M. (IX).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *Planchoniana*, F.v.M. (IX).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX).
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

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* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39—THE FOREST RED GUM (*Eucalyptus tereticornis*, Sm.).
No. 40.—THE BLACK APPLE (*Sideroxylon australe*, Benth. et Hook., f.).
No. 41.—THE SMOOTH-BARKED APPLE (*Angophora lanceolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—THE BLOODWOOD (*Eucalyptus corymbosa*, Sm.).
THE CYPRESS PINES OF NEW SOUTH WALES (*Genus Callitris*) :—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris cupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—THE MUGGA ; A RED IRONBARK (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—THE NATIVE ELM (*Aphananthe philippinensis*, Planch.).
No. 54.—THE BELAH (*Casuarina lepidophloia*, F.v.M.).
No. 55.—THE WESTERN ROSEWOOD (*Heterodendron oleæfolium*, Desf.)

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—THE GRUIE OR COLANE (*Owenia acidula*, F.v.M.).
No. 57.—THE BLACK SALLY (*Eucalyptus stellulata*, Sieb.).
No. 58.—THE SWAMP OAK (*Casuarina glauca*, Sieb.).
No. 59.—A DECIDUOUS FIG (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—THE BLACKWOOD (*Acacia melanoxylon*, R.Br.).
No. 61.—A WHITE OR CABBAGE GUM (*Eucalyptus coriacea*, A. Cunn.).
No. 62.—THE RIVER OAK (*Casuarina Cunninghamiana*, Miq.).
No. 63.—THE WESTERN WHITEWOOD (*Atalaya hemiglauca*, F.v.M.).

PART XVI (ISSUED JUNE, 1905).

No. 64.—THE WEEPING MYALL (*Acacia pendula*, A. Cunn.).
No. 65.—A PEPPERMINT (*Eucalyptus amygdalina*, Labill.).
No. 66.—THE FOREST OAK (*Casuarina torulosa*, Ait.).
No. 67.—THE IVORY WOOD (*Siphonodon australe*, Benth.)

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—THE DROOPING SHE-OAK (*Casuarina stricta*, Ait.).
No. 69.—THE RIVER WHITE GUM (*Eucalyptus numerosa*, Maiden).
No. 70.—THE NATIVE TEAK (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—THE CUDGERIE (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—THE GIANT GUM TREE (*Eucalyptus regnans*, F.v.M.).
No. 73.—THE BLACK SHE-OAK (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—THE YELLOW-WOOD (*Flindersia Oxleyana*, F.v.M.).
(*Two Plates.*)
No. 75.—THE BROAD-LEAVED PEPPERMINT (*Eucalyptus dives*, Schauer.).
No. 76.—THE BULL OAK (*Casuarina Luehmanni*, R. T. Baker).

PART XX (ISSUED JULY, 1906).

Recapitulatory (*Sixteen Plates*).

Volume III.

Part XXI (issued August, 1906).

No. 77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.).
(*Two Plates.*)
No. 78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
No. 79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

Part XXII (issued February, 1907).

No. 80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey).
(*Two Plates.*)
No. 81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
No. 82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

Part XXIII (issued March, 1907).

No. 83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
No. 84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
No. 85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.).
(*Two Plates.*)

Part XXIV (issued May, 1907).

No. 86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
No. 87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
No. 88.—The Mountain Hickory (*Acacia penninervis*, Sieb.).
(*Two Plates.*)

Part XXV (issued June, 1907).

No. 89.—The Rosewood (*Dysoxylon Fraseranum*, Benth.), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
No. 90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
No. 91.—The Two-veined Hickory (*Acacia binervata*, DC.).
No. 92.—The White Cedar (*Melia Azedarach*, L., var. australasica, C. DC.).

Part XXVI (issued September, 1907).

No. 93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
No. 94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
No. 95.—The Mulga (*Acacia aneura*, F.v.M.).
No. 96.—The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

Part XXVII. (issued October, 1907).

No. 97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
No. 98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
No. 99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
No. 100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

Part XXVIII (issued December, 1907).

No. 101.—A Bog Onion (*Amoora nitidula*, Benth.).
No. 102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
No. 103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
No. 104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

Part XXIX (issued January, 1908).

No. 105.—The Bastard Rosewood (*Synoum glandulosum*, A de Jussieu).
No. 106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
No. 107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
No. 108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

U. HOLZER
BINDER
BOSTON, MASS